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Investigation of the Effect of Short-Term Turnaround Strategies on the Survival of Publicly Listed Small and Medium Enterprises (SMEs)

Salim Ghazvini Kor
University of Wollongong in Dubai

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Investigation of the Effect of Short-Term Turnaround Strategies on the Survival of Publicly Listed Small and Medium Enterprises (SMEs)

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Abstract

Many studies conducted on large enterprises report on a range of turnaround strategies that affect corporate recovery and firms' survival. Four specific strategies that are frequently mentioned in the literature pertaining to large enterprises are CEO change, retrenchment, recovery response and financial restructuring. However, fewer studies have been conducted to study turnaround in publicly listed Small and Medium Sized Enterprises (SMEs). Moreover, as a prompt response to declining performance, the existing corporate turnaround management literature lacks evidence for the effect of turnaround strategies on the success of turnaround attempts in listed SMEs during a short period. The study also investigates whether corporate turnaround has a relatively higher level of success in listed SMEs facing declining performance if it were attempted earlier in the firms' life cycle, prior to the point that businesses face net loss. To address the mentioned gaps in the corporate turnaround management literature, a two-part analysis is employed. In the first part, utilizing panel data for 15 years (2000-2014), this study investigates the short-term effect of the three most commonly reported turnaround strategies on the survival of publicly listed SMEs, while firms encounter net loss. To achieve this goal, the study makes use of existing data on 521 publicly listed SMEs in North America region from the Osiris Database in order to test the hypotheses that turnaround strategies significantly affect survival of the listed SMEs, while companies encounter net loss for a protracted period. Accordingly, a binary logistic panel model is employed to determine the probability of successful turnaround for declined companies that faced net loss. In the second part, using the same panel data, the analysis involves the investigation of the probability of successful turnaround attempts pertaining to declined firms that did not encounter net loss by means of a multinomial panel random effects logistic model. This dissertation develops a strategic framework that enables listed SMEs to cope with declining performance situations and return to match or exceed their most prosperous period of pre-downturn performance within a short period. The main findings of the dissertation suggest that in order for listed SMEs, that encountered net loss, to successfully turnaround during a short period, firms should increase their operating revenue (OR) whilst at the same time they reduce their costs through decreasing the cost of goods sold (CGS), selling, general and administrative expenses (SG&AE), and research and development expenditures (R&D). In these companies, the CEO experience (retaining the CEO) significantly affects successful turnaround during a short period. The study also discusses the optimal cutoff point, at which employing turnaround strategies maximize the probability of success for all short-term turnaround attempts collectively, before the listed SMEs, facing declining performance, encounter net loss. The optimal cutoff threshold is ascertained to be between 63% - 65% decline from the firms' respective profit apexes. It is determined that, at the optimal cutoff of 64% decline from the profit apex, listed SMEs that attempt a successful turnaround prior to facing net loss should increase their OR at the same time as they embark on reducing their R&D expenditure. Moreover, results reveal that, among listed SMEs that have not encountered net loss, as the extent of performance decline increases, CEO experience becomes more effective in a successful turnaround attempt. The findings from this research have the potential to inform managers of listed SMEs about appropriate

turnaround strategies and to add to the understanding of how listed SMEs may address declining performance.

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Certification

I, Salim Ghazvini Kor, declare that this thesis submitted in fulfilment of the requirements for the conferral of the degree Doctor of Business Administration, from the University of Wollongong, is wholly my own work unless otherwise referenced or acknowledged. This document has not been submitted for qualifications at any other academic institution.

Salim Ghazvini Kor

1st April 2019

Acronyms and Definition of Key Terms

Debt restructuring: Debt refinancing involving extending, converting or forgiving of debt or interest (Sudarsanam & Lai 2001).

Discretionary expense: A discretionary expense is a non-essential cost in a business operation. It is often viewed as “wants” rather than “needs.

Dividend cut/omission: Omission or reduction of dividends.

Equity issue: Issue of equity for cash.

Financial slack: It is a financial capability that can be repositioned or utilized to develop other internal capabilities (Nohria & Gulati 1996).

GFC: The financial crisis of 2007–2008, also known as the global financial crisis and the 2008 financial crisis.

IFC: International Finance Corporation.

JIT: Just in Time turnarounds, which refers to turnaround attempts by declined firms at relatively greater extents of declines from the profit apex (as compared to Smart turnarounds) prior to facing net loss.

Listed company: A company that has issued securities through an initial public offering (IPO) and is traded on at least one stock exchange or in the over-the-counter market.

NSF: National Science Foundation.

Profit apex: Firm’s highest recorded profit up to time during the study period (2000 to 2014), measured in this study by net income.

Recovery response: Turnaround attempt where the firm endeavors to improve its financial performance through market growth strategies.

Retrenchment: Turnaround effort where the firm reduces costs and assets.

ROI: Return on investment is the ratio between the net profit and cost of investment resulting from an investment of some resources.

ROS: Return on sales is net profit as a percentage of sales revenue.

SBU: Strategic Business Unit is defined as a business unit within the overall corporate identity.

Short-term: The study employs panel data for 15 years, along with 4-year time frame, from 2000 to 2014, to identify the listed SMEs that attempted a successful turnaround.

Slack: The difference between an organization's total resources and committed resources. Resources can be financial, technological, managerial, and so forth.

SMEs: Small and Medium Enterprises (SMEs) are organizations with their numbers of employees less than 300, total annual sales fewer than US\$ 15 million and total assets less than US\$ 15 million (IFC, January 1, 2012). In order to be categorized as SME, an organization must comply with two of the three mentioned criteria (IFC, January 1, 2012).

Turnaround: The strategies and implementation efforts required to reverse a firm's threatening performance decline and to return to match or exceed its most prosperous periods of pre-downturn performance.

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Chapter 1

1. Introduction

1.1. Background of the Problem

Today's business and social environments are characterized by rapid and continuous change. As a result of this, performance declines and organizational crises are accepted more as the rule than rare events (Paraskevas 2006). Due to increasing financial distress that companies face, turnaround and survival research has recently gained momentum (McKinley, Latham & Braun 2014; Schmitt & Raisch 2013; Lim et al. 2013; Ndofor, Vanevenhoven & Barker 2013; and Boyne & Meier, 2009). According to Barker and Barr (2002), almost all business entities experience the issue of performance decline at some point in time. The intensity of competition in markets, both domestic and foreign, fast technology changes and evolving markets have increased the probability of observing performance declines within different organizations. The livelihood of a firm depends on the way management identifies the sources of these performance declines, more specifically severe declines, and implements the required actions in order to cope with these situations (Chowdhury 2002).

Corporate turnaround is crucial for the livelihood of businesses (McKinley, Latham & Braun 2014). Number of companies in need of turnaround strategies are growing in frequency (Pearce & Robbins 1993) and the majority of the businesses, which encounter extensive or sustained performance decline, fail to recover (Pandit 2000). Numerous studies on corporate turnaround suggest a range of strategies employed that affected corporate recovery, such as costs and assets restructuring, debt restructuring, research and development initiatives, as well as the increased efforts to upsurge sales (Balgobin & Pandit 2001; Sudarsanam & Lai 2001; Barker, Patterson & Mueller 2001; Barker & Duliaime 1997; Hotchkiss 1995; Arogyaswamy, Barker & Yasi 1995; Pearce & Robbins 1993; Hambrick & Schecter 1983; and Hofer 1980). However, the majority

of the corporate turnaround studies focus on large organizations (Barbero, Ramos & Chiang 2017; Pearce & Robbins 2008; Kamel 2005; Sweet 2004; Balgobin & Pandit 2001; Barker, Patterson, & Mueller 1999; Hotchkiss 1995; Arogyaswamy, Barker, & Yasi, 1995; Chowdhury & Lang 1993; Farid & Flynn 1992; and John, Lang & Netter 1992). The instances of turnaround studies focused on large enterprises are the studies by Kamel (2005) that investigated 142 public companies that filed for Chapter 11 bankruptcy protections in the United States; Sudarsanam & Lai (2001) that studied 166 large potentially bankrupt UK businesses; Balgobin & Pandit (2001) which employed IBM UK as a single case; Barker & Duliaime (1997) that studied 120 large U.S. manufacturing firms; Hambrick & Schecter (1983) that investigated 770 mature industrial-product business; and Hofer (1980) which examined 12 large companies in decline. The reason that the majority of turnaround studies are focused on large organizations is mainly due to lack of adequate information as well as accurate measures relative to SMEs when evaluating performance, specifically while facing performance decline situations. As such, the current literature lacks evidence for the application of turnaround strategies relative to SMEs. This dictates the need for further research to investigate the application of turnaround strategies pertaining to survival of listed SMEs, while facing declining performance situations.

SMEs are considered to be one of the key drivers of innovation and economic growth within countries (Chowdhury & Lang 1996a). A large number of new jobs in every economy are associated with SMEs organization. However, compared to large firms, SMEs do not employ adequate systematic planning (Robinson 1982). Because of their size, SMEs often lack enough qualified and expert managerial resources (Chowdhury & Lang 1993), which can help alleviate an organization's ability to cope with different performance decline situations. According to Barker & Barr (2002), smaller firms are more inclined to threat-rigidity response, which is mainly due to lack of managerial competencies as well as insufficient, uncommitted, liquid resources (Mone, McKinley & Barker 1998). While large enterprises allocate adequate resources to market research and marketing campaigns (Smith 1997), smaller enterprises do not engage in enough market-oriented investigations and systematic planning. This indicates that small and

medium sized enterprise (SMEs) are likely to face more difficulties in managing performance decline situations as compared to large organizations. Given that the context of SMEs is different from large organizations, the applicability and effectiveness of the reported turnaround strategies in large organizations could be questioned when applied on SMEs facing severe performance decline. Hence, the existing corporate turnaround literature lacks supporting evidence for the applicability of the reported strategies in SMEs.

Moreover, studies that focused on turnaround strategies and on the short-term impact of strategies on firms' performance declines (Hambrick & Schecter 1983; Chowdhury & Lang 1993; and Sweet 2004) only relied on data for a very short period of time, such as 4 years. Employing only 4 years of data raises the issue of inadequate control for exogenous factors, such as general economic conditions, and thus restricts the interpretation of the results. Therefore, in order to address this limitation in the existing research, this dissertation employs panel data from years 2000 to 2014 (15 years) and a 4-year rolling time frame¹ to identify the publicly listed SMEs that attempted a turnaround and control for the impact of exogenous factors on turnaround.

1.2. Significance of the Research

Given the aforementioned limitations, the focus of this research is to investigate the application of turnaround strategies in publicly listed SMEs aiming to assist a firm's recovery from performance decline situations. Through examination of the literature this study investigates the application of different turnaround strategies that enables listed SMEs to cope with declining performance situations and return to match or exceed their pre-downturn performance within a short period. The relation between different turnaround strategies and the firm's successful recovery is examined in an effort to propose an appropriate strategic framework for SMEs. This framework may assist publicly listed SMEs overcome declining performance situations. To achieve

¹ This dissertation examines intervals of four years from 2000 to 2014, i.e. 2000-2003, 2001-2004, 2002-2005, 2003-2006, 2004-2007, 2005-2008, etc. Employing the intervals of four years to study turnaround is consistent with the 4-year time frame that has been employed by Hambrick and Schecter (1983) and Sweet (2004).

this goal, the study employs the existing corporate turnaround life cycle model (adapted from Kamel 2005), as well as the approach by Hambrick & Schecter (1983) and Sweet (2004), to investigate the effect of turnaround strategies relative to different phases of the corporate life cycle, while firms face performance declines. Therefore, the study not only determines the application of turnaround strategies pertaining to listed SMEs' survival, while firms encounter net loss for a protracted period of time, but also investigates whether corporate turnaround has a relatively higher level of success if it were attempted earlier in the decline stage of the corporate life cycle, within declined² listed SMEs, prior to the point that firms encounter net loss.

Additionally, by utilizing panel data for 15 years (2000 to 2014) and examining 521 SMEs in the North America region, the study attempts to address several deficiencies identified in previous studies in turnaround literature, such as controlling for the effect of exogenous factors on turnaround. Consequently, through employing panel data for 15 years, this study contributes to establish a framework of turnaround strategies for listed SMEs in terms of different extents of performance declines pertaining to corporate lifecycle.

1.3. Organization of the Dissertation

The remainder of this dissertation is structured as follow: Chapter 2 presents the literature Review, which incorporates reviewing the existing literature on small and medium sized enterprises (SMEs), turnaround management and its theoretical background, as well as the adaptation of the existing literature to research objectives. More specifically, in the section 2.4 of chapter 2, as the adaptation of the extant literature to research objectives, the study synthesizes different types of turnaround, research priorities, turnaround strategies and modeling options. In chapter 3, where the data as well as the research methodology are presented, the study elaborates on the data collection procedure, performance measures and definitions of the variables, as

² Consistent with Hambrick and Schecter (1983), Chowdhury and Lang (1993) and Sweet (2004), in this research “declined firms” are defined as companies encountering drop in profit for at least two consecutive years.

well as the sampling design structured in this research. Chapter 4 explains the econometric approach and data analysis. Chapter 5 elaborates on the results as well as their relative discussion in two parts. In the part one of chapter 5, the binary model for Survival turnaround, which relates to declined listed SMEs that encountered net loss, is discussed. Part two of chapter 5 discusses the multinomial model for Survival vs. Just in Time (JIT) vs. Smart turnarounds employed in declined listed SMEs that do not face net loss, as well as the firms that are confronted with negative net income. The last chapter (Chapter 6) presents the conclusions in terms of applying strategic turnaround strategies to listed SMEs in performance decline situations, limitations of the study, as well as suggestions for further research.

Chapter 2

2. Literature Review

The literature review section of this dissertation provides a systematic review of turnaround management and relative evidence from the extant corporate turnaround literature. This chapter first elaborates on turnaround management, stages of turnaround, turnaround strategies, as well as the theoretical background of strategies relative to corporate turnaround. In the subsections that follow, the literature review then defines some of the most commonly employed terms in this dissertation, such as Small and Medium-Sized Enterprises (SMEs) and Listed SMEs. Afterwards, this section of the dissertation elucidates the adaptation of literature to research objectives.

2.1. Turnaround

Long run survival of an economic unit would require profitable operations and thus declining firms may employ “turnaround strategies” to help turn their profits around (Sudarsanam & Lai 2001). Turnarounds are generally referred to as the strategies and implementation practices that business entities apply to address a performance decline (Kamel 2005). When firms face a financial distress, that threatens the livelihood of the corporation, they engage in a turnaround strategy, or a combination of strategies, that best fits the limited resources as well as the managerial perspectives of those organizations (Sweet 2004). Doyle & Desai (1991) declared that between 20 and 30 percent of all firms require turnaround at any point of time. Chowdhury & Lang (1993) further claim that all small firms require turnaround at some point in time. Pearce & Robbins (1993, p. 615) defined corporate turnaround as “the process by which once-successful firms that experience severely declining performance for a protracted period of time, overcome their troubles and return to match or exceed their most prosperous periods of pre-downturn performance”.

Not every decline in performance may necessitate turnaround as the term alludes to those strategies required to retrieve the livelihood of an organization. Therefore, the

extent of the declining performance should be severe enough for an organization to require turnaround. However, the application of different turnaround strategies may vary from one organization to another, as it greatly depends on factors, such as the severity of the declining performance as well as the availability of required resources in each organization to implement the necessary changes. Furthermore, the success of turnaround can vary based on the different measures used to evaluate the relative effect of turnaround strategies in an organization (Kamel 2005), such as profitability, stock price, sales volume, turnover, return on investment (ROI), positive cash flow, return on equity (ROE), and other measures. Moreover, successful turnarounds encompass some or all of these measures (ibid). Therefore, for performing a successful turnaround an organization needs to be able to accurately measure the effect of these changes within the system.

Performing a turnaround within an organization relies to a great extent on the management insight of the current and potential status of the corporation (Boyd 2011). Managing a turnaround within an organization comprises of integrated procedures of establishing accountability, performing diagnostic investigation, creating an information system, formulating strategies, implementing the required changes, and evaluating the outcomes (Di Primio 1988). It is probable that many turnaround efforts fail because of managerial incompetence (Hartman 2004). Thus, to ensure the success of a turnaround within an organization, the leadership plays a critical role in determining the required changes, allocating the required resources, as well as monitoring the impact of the turnaround strategies (Boyd 2011).

2.1.1. Turnaround Models

Schendel, Patton & Riggs (1976) developed their initial turnaround theory where they proposed that all turnarounds consist of a declined stage in firm performance followed by a recovery stage. In terms of generic stages of turnaround strategies, Pearce & Robbins (1993) have proposed a two-stage generic model of retrenchment and recovery strategies. Likewise, Arogyaswamy, Barker & Yasai (1995) have theorized a two-stage model encompassing all turnaround strategies: 1) decline-stemming

strategies, which reverse the negative consequences of decline, and 2) recovery strategies, which upsurge the firms' level of competence by increasing its market share.

Balgobin & Pandit (2001) focused on the process of turnaround by establishing a generic five-stage turnaround model, which consists of (1) decline and crises, (2) triggers for change, (3) recovery strategy formulation, (4) retrenchment and stabilization, and (5) return to growth (As illustrated in figure 1).



Figure 1. Generic Five-stage Turnaround Sequence. Adapted from Balgobin and Pandit (2001).

Referring to this model, declining performance originates a crisis that instigates a radical change. Afterward, the crisis situation forces an organization to engage in retrenchment stage in order to increase its sustainability and to provide resources needed to address necessary changes. Many studies confirm that the retrenchment initiatives are the prerequisite for any successful turnaround (Barbero, Ramos & Chiang 2017; Lim et al. 2013; and Morrow, Johnson & Busenitz 2004); hence, it should be the first stage in any turnaround efforts (Pearce & Robbins 2008; Slatter & Lovett 1999; Arogyaswamy, Barker & Yasai 1995; and Pearce & Robbins 1993). It is believed that performance decline decreases the availability of resources, such as cash

money, in organizations required to address the necessary changes. Therefore, assets and costs need to be relatively reduced in order to save an organization (Pearce & Robbins 1993; and Trahms, Ndofor & Sirmon 2013). The retrenchment stage should then be followed by the “return to growth” phase, in which firm makes effort to recover their market share (ibid).

According to Robbins & Pearce (1992), turnaround responses often comprise of two overlapping stages, retrenchment and recovery and sharp declines are more likely to force a firm to retrench. Hofer (1980) established two broad turnaround strategies: operating and strategic. The operating initiatives are efficiency oriented and pursue short-term cost reductions (Trahms, Ndofor & Sirmon 2013; Ndofor, Vanevenhoven & Barker 2013). Strategic efforts address changes at a firm’s business level or the way firm competes with other firms within the same business (Ndofor, Vanevenhoven & Barker 2013) and are concerned with sustained long-term profitability (Barker and Duhaime 1997). A two-stage theoretical framework of turnaround, “retrenchment” and “recovery”, has further been developed and adapted by Bibeault (1982), Hambrick & Schecter (1983), Slatter (1984), Finkin (1985), Modiano (1987), Grinyer & McKieman (1990), Robbins & Pearce (1992), Chowdhury & Lang (1993), Pearce & Robbins (1994b), Michael & Robbins (1998), Sudarsanam & Lai (2001), Sweet (2004), Pearce & Robbins, (2008), and Ndofor, Vanevenhoven & Barker (2013).

Based on the above discussion, there is agreement amongst researchers that generic model of successful turnaround would necessarily involve the two stages of (a) retrenchment initiatives to stem the decline and (b) recovery initiatives to increase the market share.

2.1.2. Defining Turnaround Situation

Different authors express different standpoints within the turnaround literature, in terms of the relative measures that determine if an organization requires turnaround. For example, Hambrick and Schecter (1983) and Chowdhury and Lang (1996b) claim that when the average Return on Investment (ROI) declines below a pre-tax 10 percent

cut-off value for 2 consecutive years, a firm faces a turnaround situation. However, Robbins & Pearce (1992) employed 2 consecutive years of decline in ROI and Return on Sales (ROS) at a rate greater than the industry average as the determinant for an organization's turnaround situation, but only if that organization had 2 consecutive years of increasing ROI and ROS right before this declining period. While ROI has been considered a poor measure of the actual performance level of retrenching companies during a turnaround attempt (Barker & Mone 1994), ROS has further been employed as a performance measure in other turnaround studies (Barbero, Ramos & Chiang 2017; Schilke 2014; Lim et al. 2013 and Shamsie, Martin & Miller 2009). There are also studies that have employed return on assets (ROA) as a measure of firm performance (Sudarsanam & Lai 2001). However, ROA is highly correlated with asset retrenchment, and could thus, increase without actual performance (Trahms, Ndofofor & Sirmon 2013). Slatter (1984) considered 3 consecutive years of decline in profit as the minimum requirement to assure existence of a turnaround situation in a firm. Hambrick & Schecter (1983), on the other hand, considered average pretax ROI below 10 percent for two consecutive years to ensure the presence of turnaround situation in a business entity. Bibeault (1982) defined a minimum of 3 consecutive years of decline in net income or 80 percent decrease in the net income during a single year to distinguish firms that require turnaround. Correspondingly, Schendel, Patton & Riggs (1976), believed that 4 consecutive years of decline in after-tax net income ensures that a firm requires a turnaround. Consequently, there is no consensus amongst researchers in terms of the relative measures of decline for organizations to require turnaround. However, the common understanding for the need of turnaround is implied by the decrease in profitability over an extended period of at least 2 or more years.

When an organization finds itself within a declining performance situation, it needs time to evaluate distinctive options that minimize the consequences of the decline, prior to decision-making or a selection of strategy (Moore, Nolan & Gillard 2006). Thus, determining the sources of the performance decline in an organization is critical for the success of coping with a declining situation (Ghazvini Kor & Sikdar 2014; and Gundel 2005). Yet, considering profitability alone as a measure to infer the existence

of turnaround situation in an organization is not advised (Kamel 2005). The loss of profitability, by itself, does not determine the sources of the decline. For instance, a firm might encounter a loss just due to a political reason or a market change. Therefore, an organization might be able to solve such issues in a short period of time without requiring a turnaround. Furthermore, the period of time that a business entity encounters a loss is also important for determining the existence of a turnaround situation (Schendel, Patton & Riggs 1976). For example, a turnaround situation may not exist, if a corporation faces a performance decline for a single year (ibid). On the contrary, an organization requires a turnaround, if it experiences a major cash flow crisis due to consecutive years of loss in profitability (Kamel 2005). That being the case, the livelihood of an organization is threatened. Therefore, determining the sources of decline, as well as the period of time an organization faces a performance decline is critical for ascertaining the existence of a turnaround situation.

Consequently, while different authors employed different measures to determine if declined businesses require turnaround, the general consensus for considering a turnaround situation is to employ a profitability measure. Additionally, it is generally agreed that firms must also face decline in profit for at least two consecutive years to necessitate turnaround (Hambrick & Schechter 1983 and Chowdhury & Lang 1996).

2.1.3. Turnaround Strategies

Noticing that an organization requires a turnaround does not guarantee that declining organizations can cope with the declining performance situations (Dickerson 2003). When the existence of a turnaround situation in an organization is determined, the next step is to establish appropriate strategies relative to the declining performance situation (Sweet 2004). Sweet (2004) asserts that firms need to employ short-term turnaround strategies to minimize the negative consequences of declining performance and to decrease the probability of bankruptcy. However, according to Rogers, Pace & Wilson (2002) numerous turnarounds fail due to inappropriate and late response actions to declining situations. More specifically, scarcity of resources in small organizations increases the probability of failure to cope with declining performances in small firms

(Chowdhury & Lang 1993). Thus, from the managerial as well as the financial standpoints, determining the sources of declining performance is critical for establishing appropriate strategies to handle the declining situations but it is only one step in a chain of events that leads to recovery.

2.1.3.1. CEO Change

The literature pertaining to identifying the sources of decline in an organization reveals that an organization may encounter a performance decline due to internal or/and external reasons (Bibeault 1982). Market competition changes, government constraints, political alterations, economic shift, technological changes and industry performance are instances of external forces that may affect the performance of an organization. However, the mainstream of internal forces for performance decline in an organization is of management origin (opcit). According to Bibeault (1982), the “One-Man Rule” notion can lead to lack of management insight, management change issues, inefficient bureaucratic management, and imbalanced boards: the major internal sources of performance decline within organizations. In addition to the internal managerial sources of issues, he also added non-participative and incompetent boards as well as ineffectual finance function as additional internal sources of performance decline within organizations (ibid).

Issues originating from either internal or external sources, require organizations to make necessary changes in order to remain viable. According to Barker & Barr (2002), different companies employ different approaches in order to counteract a performance decline situation. Performance decline situations in organizations are likely to establish the impetus for organizations to take necessary actions to minimize the negative consequences of decline. For example, a firm might not be able to meet its debts due to a decline in performance. This is considered one of the most probable cases, in small organizations, due to a scarcity of the financial resources (D’Aveni 1989). According to Castrogiovanni & Bruton (1992), one of the worst scenarios is when a business entity does not have the ability to pay the wages and salaries to its employees. In such scenario, the change usually triggers toward appointing a new CEO (ibid).

Chowdhury & Lang (1996a) identified lack of management ability as one of the critical sources of performance declines in small industrial firms. In terms of decline in SMEs, the authors identified two types of decline, “gradual decline” and “crisis”, and assessed their relationship with successful turnaround. They related the performance decline in small firms to a “boiled frog phenomenon”, a classical psychological response experiment by Tichy & Devanna (1986) showing different reactions of frog to boiled versus mild water. Chowdhury & Lang (1996a) assert that a lack of accurate measures in small firms, cause them to fail to notice the declining situations and thus fail to identify the sources of decline. As a result, managers tend not to respond to gradual declines at the very beginning phases and hence they eventually face a crisis (ibid). However, the study found that small organizations are more successful in responding to sharp declines or crises than gradual declines (ibid). Furthermore, Balgobin & Pandit (2001) assert that management issues are the primary sources of performance declines in organizations. Lack of management insight and overconfidence of the management relative to their decisions deprive the organization of the ability to address necessary changes in response to the declining situations (Dickerson 2003). Therefore, an organization may not be able to respond to the declining performance situations or to identify the sources of declines if the management does not make well-thought-out and timely managerial decisions (Hartman 2004). This is supported by the view of D’Aveni (1989) who stated that managerial factors are critical for organizations to respond to declining situations.

The leadership, more specifically the CEO, plays a critical role in the success of any turnaround (Grinyer & McKiernan 1990; Hartman 2004; Kamel 2005; and Lucero, Kwang & Pang 2009), and CEO change is one of the most common internal changes throughout a turnaround process within large organizations (Grinyer & McKiernan 1990). According to Barker, Patterson, and Mueller’s (2001), most successful turnaround attempts engage with the change in the top management. As a *management restructuring* initiative during a turnaround process many studies reveal that change of the top management in large organizations is a prerequisite for successful turnaround attempt (Schendel, Patton & Riggs 1976; Hofer 1980; Bibeault 1982; Slatter 1984;

Gilson 1989; Thain & Goldthorpe 1989; Grinyer & McKiernan 1990; and Murphy and Zimmerman, 1993). Slatter 1984 asserts that a change in top management is a critical indication for creditors, bankers, as well as employees to be more optimistic about the improvement of the firm's performance, while the firm faces a crisis situation. Among the studies focusing on turnaround in large declined firms, Schendel, Patton & Riggs (1976) determined that more than 80 percent of large successful turnaround firms appointed a new CEO. Further support comes from Bibeault (1982) who reported that 68 percent of the large turnaround firms engaged with change of the top management. Other researchers reported different percentages relative to the change of the CEO. For instance, Thain & Goldthorpe (1989), and Grinyer & McKiernan (1990) reported 70 percent and 85 percent of large successful turnarounds employ the change of the CEO, respectively. It is crucial to effectively communicate the causes of decline and the relative changes required to implement turnaround strategies throughout all levels of an organization. According to Kanter (2003), in order for a turnaround to be successful, the CEO should inspire the organization and restore the confidence within the employees. Therefore, the change of the CEO is a common internal change within the large organizations undergoing turnaround.

Consequently, while top management initiatives and responses play a critical role in coping with declining performance situations, the majority of research articles that report significant effect of CEO change on successful turnaround is focused on large organizations (Bibeault 1982; Thain & Goldthorpe 1989; Grinyer & McKiernan 1990 and Grinyer & McKiernan 1990; and Lucero, Kwang & Pang 2009). Due to the differences between the context of SMEs and large organizations, the finding from these studies in terms of top management change may not be applicable to listed SMEs. Thus, the question is that, as compared to large companies, does change of the top management significantly affects successful turnaround attempts in listed SMEs? Consequently, it is worthwhile to determine if change of the top management has also been significantly employed by successful turnaround listed SMEs to counteract a performance decline, which is further addressed in this dissertation.

2.1.3.2. Retrenchment Strategies

Retrenchment, according to Sweet (2004), Arogyaswamy, Barker & Yasai (1995), and Pearce & Robbins (1993), is the commencement stage in any turnaround to reinstate profitability. It is considered as the most common strategy for declined businesses, as well as the most critical stage in any turnaround attempt (Lim et al. 2013; and Morrow, Johnson & Busenitz 2004). Hofer (1980) explained retrenchment as assisting organizations to address cash flow difficulties and lack of competence. Correspondingly, Pearce & Robbins (1993) described retrenchment as activities through which firms upsurge their efficiency through decreasing the assets and costs relative to the generated incomes. Therefore, retrenchment can provide organizations with the resources required for accomplishing further strategic initiatives (Pearce & Robbins 1993).

Due to the critical role of the retrenchment efforts on the livelihood of declined firms, the concept of retrenchment has been widely debated. However, while retrenchment is often characterized as operational actions (Barbero, Ramos & Chiang 2017), concerning its strategic nature the concept of retrenchment seems ambiguous. In turnaround management literature, studies focusing on retrenchment initiatives have adapted different approaches in terms of the strategic versus operational nature of retrenchment efforts. Ndofor, Vanevenhoven & Barker (2013); and Schmitt and Raisch (2013) define retrenchment as operating activities. As opposed to strategic initiatives, in this approach, retrenchment efforts are defined as reductions in cost and assets dismissal with the objective to upsurge firm efficiency (Dewitt 1998; Hambrick & Schecter 1983; and Schmitt & Raisch 2013). Conversely, other theorists categorize retrenchment as efforts that involve firm's strategic initiatives in addition to the efficiency (operating) activities (Arogyaswamy, Barker & Yasai 1995; Barker & Duhaime 1997; Dawley Hoffman & Lamont 2002; Pearce & Robbins 2008; Boyne & Meier 2009). From this standpoint, retrenchment is not limited to operating initiatives, as it further encompasses strategic actions as well. Hence, retrenchment is described as decrease in the size and scope of a business through strategic actions, such as product-market refocusing concerning the retrenchment, discontinuation of

lossmaking product lines, deleting lines of business that are not related to the core, as well as ceasing unpromising products (Barker & Duhaime 1997; Sudarsanam & Lai 2001; Pearce & Robbins 2008; and Boyne & Meier 2009). As such, from this point of view, companies involve with strategic activities throughout retrenchment.

Robbins and Pearce (1992) and Pearce and Robbins (1993) reported that the focus on reducing costs is the first step in the retrenchment process. Michael and Robbins (1998), agree that retrenchment is employed in order to reduce assets and costs. Furthermore, Goodman (1982) and Slatter (1984) state that retrenchment initiatives extend from the commencement of any turnaround attempt and continue until cost reduction efforts are accomplished. Given that turnarounds signify conditions of extreme change (Barbero, Ramos & Chiang 2017), for declining business, retrenchment is the most common strategy as well as the most critical stage during a turnaround procedure (Lim et al. 2013; Morrow, Johnson & Busenitz 2004). Pearce and Robbins (2008), Slatter and Lovett (1999), Arogyaswamy, Barker and Yasai (1995) and Pearce and Robbins (1993), confirm that the retrenchment initiatives are the prerequisite for any successful turnaround attempt; and it should be the first stage in any turnaround efforts. Castrogiovanni & Burton (2000) claim that by performing retrenchment, a declining organization can potentially reinstate efficiency, generate slack and create impetus within the organization.

Another definition for retrenchment comes from Kamel (2005) who suggests that retrenchment refers to the stage, within which firms reduce noncore assets and costs, such as workforce. While cash plays a crucial role in livelihood of any business organization, the objective of retrenchment initiatives is to generate positive cash flow and financial slack as well as developing a solid foundation to ensure business continuity (Michael & Robbins 1998; Morrow, Johnson & Busenitz 2004; and Kamel 2005). It helps to stabilize the business as it impedes losing cash (Morrow, Johnson & Busenitz 2004; and Sweet 2004). By employing retrenchment strategies, firms can conserve cash through reducing the staff and selling costs as well as discretionary expenses, such as wages, supplies, advertising and consultants (Arogyaswamy 1992).

Sweet (2004) asserts that selling of noncore asset and inventory, as well as reducing the receivables can also be a source of cash in a retrenchment stage. In SMEs, cash plays a vital role in undertaking any strategy and in most turnaround situations the managers fail to address necessary changes either due to lack of the required resources, such as cash, or late actions (Chowdhury & Lang 1993). Small organizations usually face crises before the implementation of any response action (Sweet 2004). The intensity of the critical situations in small firms increases the probability of failure of any retrieval effort. Not having enough cash to pay the wages or to clear debts diminishes the internal confidence of the declined organizations and upsurges the probability of failure of turnaround. Consequently, retrenchment efforts play a fundamental role in the success of a turnaround in SMEs.

Among research that focuses on retrenchment aspects within a turnaround process, many studies suggested decreasing the R&D expenditure as a retrenchment initiative to reduce the costs (Morrow, Johnson & Busenitz 2004; Balcaen & Ooghe 2004; Barker & Mone 1994; Robbins & Pearce 1992; Hambrick & Schechter 1983; Bibeault 1982; and Hofer 1980). R&D expenditure is a money spent in a planned research for acquiring new knowledge and in utilizing such knowledge to devise new applications. It is one of the most crucial factors to be taken into consideration by stakeholders, more specifically whilst reflecting on public listed firm.

When firms face declining performance, in order to employ their resources more efficiently, it is required for them to assess their current operating condition (Pearce & Robbins 2008). Accordingly, reduction or upsurge in R&D spending within declined firms is based on the availability of resources as well as the extent of time available for firms to counteract a performance decline situation (Hofer 1980). Referring to Hofer (1980), a comparison of a common one- or two-level share-surging strategic turnaround with a common revenue-surging operating turnaround can provide inferences for the extent to which declined firms should invest in R&D. In the common share-surging strategic turnaround, while a firm's growth would initially be slow, the company invests hugely in R&D, moderately overstaff in expectation for future

progress, revises the fundamental specifications of its production and distribution system. In such turnarounds, after a period of stagnant growth, company's profit would substantially increase for a period of several years prior to deceleration as it reaches its new share position. On the other hand, in the common revenue-surging operating turnaround a declined business would mainly concentrate on its existing lines of commodities as well as its discontinued merchandise, provided that these past products can be reinstated quickly and with less cost. Simultaneously, R&D expenditures, as well as staffing would substantially be reduced. Thus, the way firms address a performance decline is based on the nature of a turnaround situation and with respect to the extent of the availability of resources to them (Chowdhury & Lang 1996a).

Hambrick & Schecter (1983) considered marketing and R&D expenditures as "cutback-based" turnaround efforts where management was inferred to be reducing these expenses in order to "tighten their belts" and increase efficiency. Their study determined that successful turnaround in mature industrial product SBUs is significantly associated with decreased R&D and marketing expenditures along with increased sales per employee. However, firms that engage with or invest in R&D have a far greater prevalence of innovation than companies without R&D initiatives (National Science Foundation 2012). As compared to business level strategies, Pant (1991), on the other hand, examined investment in R&D initiatives at the industry level in large organizations attempting a turnaround. The study found that turnaround is more likely in an industry with considerable investment in R&D, utilizing for changes in the relative positions of member firms (Pant 1991). While investment in R&D boosts productivity, it can trigger customer product innovations. Such innovations can lead to industry disequilibrium, fluctuation in demand volume or product substitutes, providing the opportunity for some companies to develop their businesses as the market is adjusting (ibid). However, only a small number of firms in the U.S. implement R&D (47,000 or about 3%) (Borouh 2010). Furthermore, according to Morrow, Johnson and Busenitz (2004), due to the nature of the industry, turnaround firms in growth industries may not cut R&D expenses. Morrow, Johnson and Busenitz (2004) studied turnaround in large firms with respect to the company's industry

situation. The study found that while firms in the combined sample significantly decreased R&D intensity during retrenchment, turnaround firms in growth industries did not significantly reduce R&D intensity. Thus, the industry of firms' operations can substantially affect the way companies counteract a performance decline situation. However, during a performance decline, firms are generally forced to reduce costs, concentrate more on efficient utilization of critical resources and confine investment in research and development (Anderson & Zeithaml 1984; Hambrick, MacMillan & Day 1982).

In summary, we can conclude that, retrenchment efforts are the prerequisite for every successful turnaround effort, as this stage provides the foundation for a successful recovery from declining performance situations (Pearce & Robins 2008; Morrow et al. 2007 and Pearce & Robbins 1993). More specifically, due to scarcity of resources in relatively smaller firms, according to DeDee & Vorhies (1998), retrenchment efforts play a critical role in retrieval responses in SMEs. Therefore, as one of the significant contributions of this dissertation, it is critical to determine retrenchment strategies that significantly affect successful turnarounds in listed SMEs.

2.1.3.3. Return to Growth (Recovery Response)

When a declined organization acquires stability and slack resources through retrenchment efforts, it is the time for that organization to ensure survival (Balgobin & Pandit 2001; Kamel 2005; and Pearce & Robbins 2008). Therefore, the firm engages in recovery response initiatives as the second and most crucial stage in a turnaround (Sweet 2004). The recovery response stage of a turnaround is referred to as set of responses intended to restore profitability in a declined organization (Kamel 2005). It is a return-to-growth strategy that a declined firm employs to increase the profitability, thus to ensure its survival (Robbins & Pearce 1992). It is critical for an organization to implement necessary strategies in order to ensure its livelihood and sustain its business.

Robbins and Pearce, (1992), Pearce and Robbins, (1993), and Arogyaswamy, Barker and Yasai (1995) theorized that the recovery response follows the retrenchment as the second phase in the turnaround procedure. The main objective of recovery response is to improve the firms' economic performance to a level that approximates its pre-downturn condition (Sweet, 2004). Arogyaswamy, Barker and Yasai (1995) and Barker and Duhaime (1997) declared that successful turnarounds are significantly associated with revenue upsurges in the recovery response stage. Barker and Duhaime (1997) acknowledged that many researchers disregarded the importance of increasing sales in the turnaround procedure. Furthermore, a successful turnaround may indicate changes in the way the firm performs a business by either entering new businesses or increasing the market share in its present business (Tvorik, Boissoneau & Pearson 1998).

Thus, the focus of the recovery stage in any turnaround is to implement return-to-growth approaches by generating more revenue as well as investment in assets (Balgobin & Pandit 2001). Hambrick and Schecter (1983) report that increasing the sales and maximizing the market share are significantly associated with the success of turnaround in declined firms. Barker and Duhainie (1997) report that their study found that large declined businesses, that have successfully recovered increase their annual sales significantly more than unsuccessful firms. This finding suggests that sales increase is likely to be a factor in the successful turnaround of decline (ibid). Therefore, it is important to implement strategies that significantly boost its sales during a turnaround process. There are several factors identified in the literature that must be taken into consideration while structuring return-to-growth turnaround strategies:

- **Availability of Slack Resources:** The availability of the resources required to implement strategies are critical for the successful recovery in a turnaround situation. According to Rosenbusch, Brinckmann & Bausch (2011), and Chowdhury and Lang (1994), the availability of slack resources, the excess uncommitted resources, can substantially improve the performance of a declined firm to recover from a declined situation. An organization can allocate

such resources to employ strategies to improve its financial performance, such as marketing strategies (ibid). However, compared to large firms, slack resources are limited within SMEs (Daniel et al. 2004).

- **Market Orientation Practices:** Market orientation practices can considerably affect performance of an organization during a performance decline situation (Jaworski & Kohli 1993). Kohli and Jaworski (1990, p. 6) defined market orientation as "the organization-wide generation of market intelligence, dissemination of the intelligence across departments and organization-wide responsiveness to it". Pelham (2000) reported that for small industrial firms engaging in turnaround process, market-oriented initiatives have the greatest effect on firms' performance.

Narver and Slater (1990, p. 21) defined market orientation as "organization culture that most effectively creates the necessary behaviors for the creation of superior value for buyers and, thus, superior performance for the business" and asserted that market orientation efforts significantly affect the profitability of an organization. According to Chowdhury (2002), it is crucial for declined firms to undertake radical changes in their product and market strategy, more specifically when a performance decline situation is critical. Therefore, the application of market orientation efforts in declined firms can help restore their profitability and return them to their growth position.

Relative to the recovery response stage of turnaround, Sudarsanam and Lai (2001) studied the recovery response strategies employed by potentially bankrupt firms and discovered that the recovered organizations engaged in external-market-focused and growth-oriented strategies whereas those that did not recover adopted fire-fighting strategies and more extensively engaged in internal operational affairs as well as financial restructuring.

- **Effective Pricing Strategies:** An effective pricing strategy during a turnaround process plays a critical role during the recovery response (Finkin 1985). However, an effective pricing strategy requires an organization to gain access to competitive knowledge about the marketplace as well as adapting accurate measures to assess the effect of these strategies (Feurer, Schuhmacher & Kuester 2019). SMEs usually lack such resources (Chowdhury & Lang 1993).

2.1.3.4. *Financial Restructuring*

Cash generation strategies, such as equity issues, are commonly-employed strategies to enhance cash flows, lessen financial distress, moderate interest cost, and discharge debt (Slatter, 1984). Financial restructuring is referred to as the reworking of a firm's capital structure to mitigate the burdens of interest and debt repayments and is categorized into two strategies: *equity-based* and *debt-based* strategies (Sudarsanam & Lai 2001).

Equity-based strategies encompass omission or reduction of dividends as well as equity issues, such as public offering, ownership issue or institutional placing. Due to liquidity restraints, constraints levied by debt agreements, or strategic purposes such improving firm's negotiating position with trade unions, businesses in financial distress tend to reduce or omit dividends (DeAngelo & DeAngelo 1990). From the empirical perspective, DeAngelo and DeAngelo (1990) and John, Lang and Netter (1992) determined that large companies respond to financial distress with prompt and insistent dividend reductions. Due to pressure from creditors relative to the security of their lending, firms under financial distress are more likely to raise equity funds through issuing share more than non-distressed companies (Sudarsanam & Lai 2001).

Debt-based strategies refer to the comprehensive restructuring of firm debt (Sudarsanam & Lai 2001). Firms engage with debt restructuring initiatives either to avoid financial distress or to counteract a prevailing financial suffering. According to Gilson (1989) and Gilson (1990), debt restructuring is the process in which the firm's existing debt contract is revised thorough (1) interest or principal payments reduction;

(2) debt's maturity extension; or (3) debt-equity substitution. Chowdhury and Lang (1993) determined that successful turnaround firms increase their liquidity thorough greater reliance on external sources of financial support. However, according to Slatter (1984), among different categories of financial restructuring, debt restructuring is less commonly practiced than raising fund through increasing the equity or acquiring new loans by UK companies. Consequently, it is worthwhile to determine how successful turnaround listed SMEs may conduct financial restricting.

2.2. Types of Turnaround

Turnaround, from a general perspective, consists of stages from commencement to accomplishment (Kamel 2005). As a corporate success strategy, Kamel (2005) evaluated the corporate turnaround relative to the firms' business cycle and declared that turnarounds are needed when the organization has already passed its maturity stage and faces a performance decline situation. According to Kamel (2005), there are three types of turnaround: "Smart turnaround", "Just-in-time turnaround" and "survival turnaround" (as illustrated in figure 2).

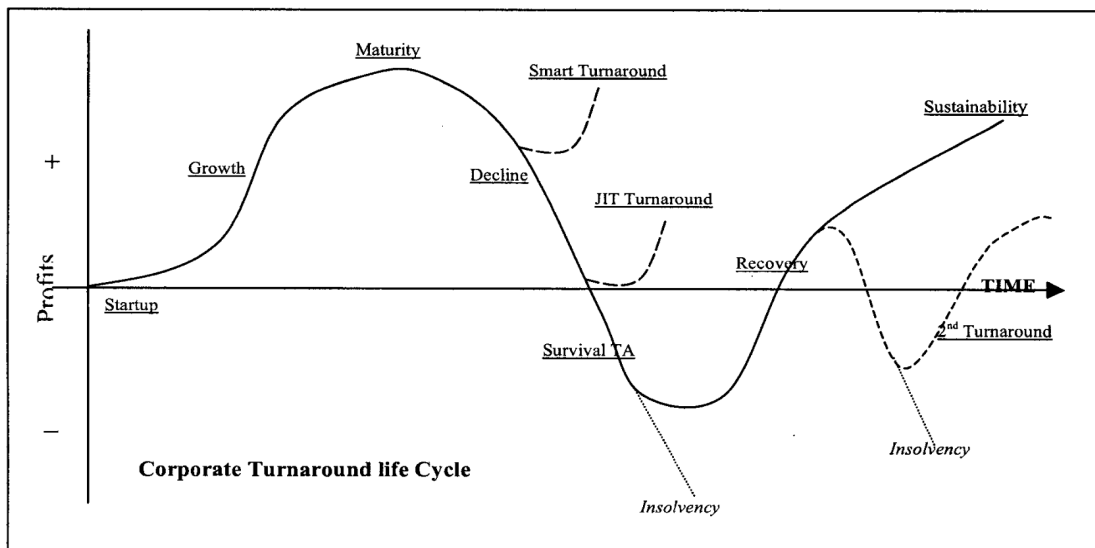


Figure 2. Corporate Turnaround Life Cycle.

Source: Adapted from Kamel (2005)

As it relates to corporate profit, Kamel (2005) claims that "Smart Turnaround" occurs when a firm identifies a decline in performance or/and profitability and performs a

turnaround at the very beginning stages of the decline. Therefore, the organization is less likely to encounter major decline in their performance and the performance decline does not threaten the livelihood of the organization (ibid). However, the author asserts that for management to be able to perform a smart turnaround, an organization requires an accurate and smart measurement system to detect the internal and external determinants of the decline as well as a preemptive and visionary management. An organization must also have sufficient financial resources available to allocate the required resources to implement necessary changes.

The second type of turnaround is “Just-In-Time” turnaround. This type of turnaround entails corrective actions just before the firm starts facing a loss (ibid). To employ just-in-time turnaround, a firm needs to have a moderate measurement system. It also requires an organization to have reasonable financial strength as well as a vigilant management system. As previously described, the declined organization can determine the necessary changes required for a quick turnaround to minimize the loss and cope with the market changes.

The third type of turnaround is the “Survival Turnaround” (Kamel 2005). It can be applied those organizations that face major loss in terms of profitability and performance for a longer time period. Usually the organization’s resources are insufficient, and its livelihood is threatened.

The corporate turnaround lifecycle model by Kamel (2005) will help us build our own conceptual model. Employing this model enables us to investigate the application of turnaround strategies relative to different extents of performance declines in listed SMEs during the decline stage of their corporate lifecycle. Thus, this dissertation will further reflect on the corporate turnaround lifecycle in the chapters ahead. In this research, the study focuses initially on “Survival Turnaround” to determine the effect of turnaround strategies relative to successful recovery from declining performance, while firms lose profit for a protracted period of time. Furthermore, as discussed, the three types of turnaround, “Smart”, “Just in Time” and “Survival”, proposed by Kamel

(2005) require different types of response. This indicates that the application of turnaround strategies could differ based on different extents of decline. Therefore, this dissertation also investigates the effect of turnaround strategies relative to different extents of performance decline prior to the point that firm encounters net loss. The application of turnaround strategies relative to different extents of performance decline has not been modeled in the existing turnaround literature. Consequently, this dissertation determines the application of turnaround strategies relative to listed SMEs' survival, when firms encounter net loss. Furthermore, it also contributes to theory by investigating whether corporate turnaround has a relatively higher level of success if it were attempted earlier in the corporate life cycle within declined listed SMEs prior to the point that firms encounters net loss.

2.3. Small and Medium Enterprises (SMEs) – Definition

Small and medium enterprises (SMEs) or small and medium-sized businesses (SMBs) are companies whose numbers of employees and annual revenues (turnover) fall below certain standards. However, there does not exist a universally acknowledged definition for SMEs. A specific country may define an SME to be an enterprise with fewer than 300 employees, while another country may designate the threshold to be less than 250 employees (Ayyagari, Beck, & Demircuc-Kunt, 2007). For instance, in the United States, the Small Business Administration defines small businesses based on industry, ownership structure, revenue and number of employees, which in some circumstances may be as high as 1500³, although the cap is typically 500 (United States Small Business Administration, Retrieved 2011-08-21). On the other hand, the European Commission defines SMEs as enterprises with less than 250 employees and an annual revenue less than 50 million euro (approximately 54 million US\$⁴), and/or an annual balance sheet total not greater than 43 million euro (approximately 46 million US\$) (European Commission, Effective from 1/1/2005). However, member states of the

³ With respect to the analyses of pertinent industry and other elements, the U.S. Small Business Administration's Size Standards Division provides the Administrator with recommendations for determining or amending size standards.

⁴ All conversions from Euro to Dollar are done using the information provided by Bloomberg Markets, available at www.bloomberg.com. The exchange rate for 1 Euro on the date 18 March 2017 employed was 1.08 US\$.

European Union have separate delineations of what defines an SME. For instance, in order to be categorized as SME in Germany, a company must have fewer than 255 employees, while in Belgium this threshold could be 100⁵.

The use of different definitions for SMEs by different countries makes comparison difficult. The International Finance Corporation (IFC) in its “Interpretation Note on SMEs and Environmental and Social Risk Management”, has defined SMEs in terms of three factors: number of employees, turnover and working capital. According to the IFC’s definition, SMEs are organizations with their numbers of employees less than 300, total annual sales less than US\$ 15 million and total assets less than US\$ 15 million, and in order to be categorized as SME, an organization must comply with two of the three mentioned criteria (IFC 2012). The use of multiple criteria in the IFC definition of SME broadly complies with the definition of SMEs in different countries and provides a more standard definition to compare SMEs across different regions. Therefore, for the purpose of this research, the IFC’s definition of SMEs will be relied upon as it is relatively more universal definition thus, allowing SMEs defined under different economies to fit within the IFC definition of SMEs and helps generalize the findings of this research.

2.3.1. SME’s as the Drivers of Economic Growth

According to Chowdhury and Lang (1996a), SMEs are referred to as the drivers of economic development and innovation within countries. Timmons (1994) asserts that SMEs account for 95 percent of all fundamental innovations since the end of World War II. According to G20 Leaders’ Summit report (November 5th, 2011), it is estimated that there will be 25 to 30 million firms formally classified as SMEs in the emerging markets. While studies show that formal SMEs constitute 45 percent of employment and 33 percent of GDP in emerging economies (IFC January 1, 2012), the general consensus is that SMEs play a critical role in the economic and social development of emerging economies through establishing career opportunities and

⁵ While a Belgian firm of 249 employees would be taxed at full rate, in Belgium it would still be eligible for SME subsidy under a European-labelled program.

generating revenue, specifically for low-income populations, stimulating economic growth and permanence, as well as contributing to the evolution of a dynamic private sector (Small Business Administration 2018).

2.3.2.SME Challenges

Despite such extensive collective impact on the emerging economies' socio-economic context, SMEs face enormous challenges. From the historical perspective, almost 400,000 SMEs fail each year (United States Small Business Administration, Retrieved August 2018) and according to the data from the U.S. Bureau of Labor Statistics (2018), 50 percent of small businesses fail after five years in business. Compared to large organizations, SMEs have fewer mechanisms to facilitate financial support adding to the intensity of critical situations (Carter & Auken 2006), such as a performance decline situation. According to the IFC and McKinsey (2010), approximately 45 to 55 percent (11 to 17 million) of the formally categorized SMEs in developing countries do not have access to formal institutional loans or other types of financial support. Consequently, as the contribution of this study, with respect to the lack of access to external financial support in SMEs, it is critical to determine appropriate turnaround strategies that would help declined businesses to counteract a declining performance situation, in order to minimize the loss and spend their remaining resources in the most efficient way possible.

SMEs often do not employ adequate systematic planning (Robinson 1982; and Carter & Auken 2006), i.e. employing a scientific method based on use of data. Because of their size, SMEs often lack enough qualified and expert managerial resources (Chowdhury & Lang 1993) to assist in coping with different performance decline situations. Decisions, strategies and procedures are centralized, and the organization behaves conservatively in its response to the crisis (Staw, Sandelands & Dutton 1981), According to Barker & Barr (2002), it causes smaller firms to be more inclined to threat-rigidity response, i.e., an attitude of extreme defensiveness. In addition, SMEs often lack sufficient, uncommitted, liquid resources (Mone, McKinley & Barker 1998; and Sweet 2004). In contrast, large enterprises may deal with a downturn by allocating

adequate resources to market-oriented research and marketing effort in a systematic manner (Smith 1997). Therefore, not being able to acquire enough market-oriented intelligence may diminish the ability of smaller firms to effectively respond to performance decline situations.

In SMEs, the consequences of committing a mistake will be more critical due to scarcity of the slack resources, such as financial and managerial resources, to address the required changes while facing crises (Chowdhury & Lang 1993). Therefore, understanding the way to effectively allocate scarce resources to cope with performance decline situations can play a vital role in the survival of SMEs (Ghazvini Kor & Sikdar 2014; and Chowdhury & Lang 1993). Hence, as a contribution of this dissertation, investigating short-term recovery response in SMEs has the potential to inform the management of SMEs about appropriate turnaround strategies and to add to the understanding of how SMEs may address declining performance.

2.4. Adaption of the Literature to Research Objectives

In the literature review section of this dissertation we have discussed the challenges that SMEs face, and reviewed turnaround strategies as well as their relative supporting evidences from the extant corporate turnaround literature. Many of the mentioned aspect will prove especially useful in constructing the theoretical framework and the econometric approach.

Throughout recent years, and encouraged by the economic downturn, turnaround and survival as a research area has gained momentum (McKinley et al. 2014; Schmitt & Raisch 2013; Lim et al. 2013; Trahms, Ndofor & Sirmon 2013; and Boyne & Meier 2009). Researchers who have studied recovery response, such as Barker & Duhaime (1997), acknowledge that many researchers disregard the importance of increasing the sales in the turnaround procedure. Others, such as Collett, Pandit and Saarikko (2014), and Arogyaswamy, Barker and Yasai (1995), assert that successful turnarounds are significantly associated with revenue upsurges in the recovery response stage. With the objective to increase the profitability, Pearce and Robbins, (2008) and Byerly,

Lamont and Keasler (2003) suggested that declined firms should only focus on those business segments that seem to be the most promising in term of increasing their profit margins. Tvorik, Boissoneau and Pearson (1998) support the view that a successful turnaround implies that a firm has altered its business by either entering new businesses or increasing the market share in its present business. However, it may be less likely that SMEs engage in new business. This could be due to limited financial as well as managerial resources available to them (D'Aveni 1989; Castrogiovanni & Bruton 1992 & Daniel et al. 2004). Therefore, it is required to investigate the impact of the recovery response strategies on the success of turnaround attempts in SMEs, which also represents one of the contributions of this research.

Amongst research that focuses on turnaround management, there are studies that investigate a turnaround strategy in isolation rather than considering it as an integral component of a turnaround strategic framework. As an instance, Barbero, Ramos and Chiang (2017) focused only on retrenchment aspect of turnaround attempts in isolation without integrating with recovery response mechanisms to establish a framework of turnaround strategies while counteracting a performance decline. As the result, there exists a research gap, relating to lack of a framework of turnaround strategies pertaining to listed SME to counteract performance declines.

Similarly, studies that investigate turnaround strategies did not take into consideration the effect of exogenous factors on firm's performance while coping with a declining performance situation. For instance, Sweet (2004) investigated the success of CEO change, cost reduction and operating revenue increase strategies in small manufacturing companies to counteract a profit decline state. It can be argued that manufacturing companies would differ from service firms in their turnaround strategies. For instance, comparing to manufacturing firms, as service companies are more reliant on workforce, they might not be relatively able to employ retrenchment by reducing the number of employees. Moreover, the study did not consider the effect of exogenous factors, such as general economic conditions, age of the firm, the industry of performance, management structure, etc. Thus, it is worthwhile to

investigate and control for the impact of exogenous factors on the applicability and effectiveness of the proposed turnaround strategies, which is further explored in this research.

Furthermore, previous research that focused on the application of turnaround in declined firms did not address how to apply turnaround strategies. For instance, Schendel, Patton & Riggs (1976), Hambrick & Schechter (1983), and Pearce and Robbins (1992) discovered that retrenchment (reducing the costs) is the prerequisite for successful turnaround. However, they did not elaborate on how to reduce the costs. This study investigates how different turnaround strategies can be applied relative to different extents of performance decline in listed SMEs. Moreover, while “time is of the essence to turnarounds” (Slatter, Lovett & Barlow 2006, p. 9), and perhaps the most vital factors in counteracting a decline in performance (Tangpong, Abebe & Li 2015), it is critical to determine the short-term application of turnaround strategies pertaining to turnaround in listed SMEs.

This dissertation addresses the mentioned gaps as well as deficiencies in the turnaround literature by determining whether CEO change, retrenchment (reducing the cost), recovery response (increasing the revenue), solely and jointly, significantly affect successful turnaround relative to different extents of performance declines in listed SMEs during a short period of time. CEO change is an important internal change for declined firms, which suggests we need to include it in our estimations (Schendel, Patton & Riggs 1976; Hofer 1980; Bibeault 1982; Slatter 1984; Gilson 1989; Thain & Goldthorpe 1989; Grinyer & McKiernan 1990; Murphy & Zimmerman 1993; and Kamel 2005). Cost reductions are the prerequisite for any successful turnaround attempt (Goodman 1982; Slatter 1984; Robbins & Pearce 1992; and Pearce & Robbins 1993). Likewise, increasing the sales and maximizing the revenue are significantly associated with the success of turnaround in declined firms (Hambrick & Schechter 1983; Arogyaswamy, Barker & Yasai 1995; and Barker & Duhaime 1997). Slatter (1984), DeAngelo and DeAngelo (1990), and John, Lang and Netter (1992) also determined the significant effect of financial restructuring on the success of turnaround

in large organizations. Thus, we have to take these critical points into consideration, as each element can significantly affect the success of turnaround in SMEs.

While the majority of corporate turnaround literature is focused on large organizations, there is not much research conducted to determine the applicability and effectiveness of turnaround strategies in declined listed SMEs. As discussed that SMEs are resource constrained and face challenges in employing their scarce resources to counteract performance decline, it is crucial for their livelihood to determine appropriate turnaround strategies framework to counteract their performance declines. This suggests adapting the existing corporate turnaround lifecycle model (Kamel 2005), which enables us to investigate the applicability of turnaround strategies pertaining to different extents of performance declines in Listed SMEs to overcome their declining performance situation. The Corporate Turnaround lifecycle model (Adapted from Kamel 2005) implies that we should split our turnaround model into three types of turnaround: “Smart Turnaround”, “Just-in-Time Turnaround” and “Survival Turnaround”. These are further summarized in the next section where the study presents the research gaps and the contributions.

2.4.1. Model Adaptation.

Existing research on turnaround had suggested the critical role of the CEOs in the success of turnaround attempts in large companies (Lucero, Kwang and Pang 2009; Kamel 2005; Grinyer & McKiernan 1990; Thain & Goldthorpe 1989; and Bibeault 1982), and the use of retrenchment and increasing the revenue as response mechanisms throughout turnaround process (Barbero, Ramos & Chiang 2017; Lim et al. 2013; Kamel 2005; Morrow, Johnson & Busenitz 2004; Sweet 2004; Balgobin & Pandit 2001; Sudarsanam & Lai 2001; Arogyaswamy, Barker & Yasai 1995; and Robbins & Pearce 1992). This raises critical questions. For instance, with respect to the difficulty associated with acquiring external financial resources, and in terms of different extents of performance declines, would retrenchment (cost-cutting) strategy be more effective than other strategies in listed SMEs while attempting a turnaround? Furthermore, by utilizing the panel data for 15 years, the study also investigates how listed SMEs may

implement successful corporate turnaround strategies relative to different extents of performance declines within a short period of time. This contribution is grounded on the proposed corporate turnaround lifecycle model by Kamel (2005). As an example, the study investigates which of the “cost of goods sold reduction” or “discretionary expenses reduction” is more effective on achieving successful turnaround, while declined listed SMEs are implementing a retrenchment (cost reduction) strategy relative to different extents of performance declines. Consequently, as the general research question, given the criticality of survival for SMEs, would application of the proposed strategies, either in isolation or combined, significantly contribute to successful turnaround in listed SMEs within a short period of time? The answer to such questions has not yet been investigated in the existing literature.

Muczyk and Adler (2002) assert that the management leadership style is critical to the success of turnaround attempts, which has been supported by significant positive correlation between CEO change on successful recovery of large declined organizations. However, due to lack of adequate resources, as well as deficiency of accurate measures in small organization, managers may not notice, or may not respond to performance decline situations (Chowdhury & Lang 1993). Due to lack of adequate resources in SMEs, these firms may not be able to employ the right CEO and it could affect the success of turnaround attempts. Moreover, lack of adequate resources in SMEs would constrain the new CEO to effectively implement the turnaround strategies, increasing the probability of failure to recover. Therefore, CEO change may not turn out to be as effective as in large declining organizations. Consequently, it is crucial to determine if the change of CEO is significantly contributing to successful turnaround in SMEs.

All firms, including SMEs, experience a corporate life cycle as depicted in figure 3 (Barker and Barr 2002; and Kamel 2005). Since the absence of turnaround would take the firm to insolvency, the profit decline phase, after a firm has reached its profit apex, is critical and requires extensive attention (Kamel 2005). This phase is even more critical for those SMEs that encounter net loss for a protracted period of time, as they

lack sufficient slack resources to address performance decline situations. Thus, it is imperative that SMEs apply turnaround strategies while they are still in the positive zone of the profit decline phase.

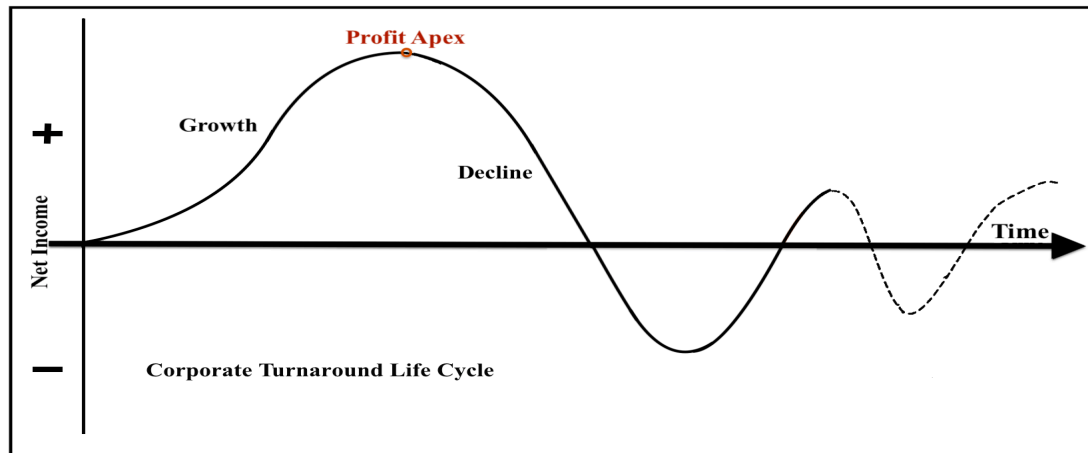


Figure 3. Corporate Turnaround Life Cycle.

Kamel (2005) has defined two types of turnaround during this phase (a) Smart turnaround, when the profit is declining after the apex point but is still positive and (b) JIT turnaround, when the profit is declining and is reaching zero (As illustrated in figure 2 in section 2.2.3.4.). Therefore, it is critical to investigate the turnaround strategies that can significantly affect successful turnaround during a short period of time in listed SMEs relative to smart turnaround and JIT turnaround, as it helps declined listed SMEs not to encounter net loss and cope with their declining performance situations (ibid). Moreover, it is also critical to determine the application of the proposed strategies relative to the listed SMEs that encountered net loss for a protracted period of time, which is critical for the livelihood of these firms.

Rogers, Pace and Wilson (2002) assert that numerous turnarounds fail due to inappropriate and late response actions to declining situations and this is more relevant for SMEs as discussed earlier. Hence, addressing “Smart” and “JIT Turnaround” situations in SMEs could be more successful as the responses are not too late in declining situations. More specifically, scarcity of resources in small organizations increases the probability of failure to cope with declining performances in small firms

(Chowdhury & Lang 1993). Since the livelihood of the organization is not affected during “Smart Turnaround” and “JIT turnaround”, there is greater likelihood of success of these turnaround strategies as compared to “Survival turnarounds”.

Kamel (2005) examined the success of the proposed corporate turnaround strategies by focusing only on bankrupt firms that attempted a “Survival turnaround” but did not assess the effect of “smart” and “JIT turnarounds” in order to avoid bankruptcy. More specifically, the mentioned research did not specify a short-term period in order to investigate the effect of corporate turnaround strategies. Therefore, as the contribution of this dissertation, we need to add to the literature by providing evidence for the application of short-term turnaround strategies on the survival of SMEs prior to the point that firms encounter net loss.

By employing the existing corporate life cycle model (Adapted from Kamel 2005), the study investigates the effect of turnaround strategies relative to different extents of performance decline, which has never been modeled in the existing turnaround literature. Therefore, in terms of the contribution of this research, the study contributes to theory by investigating whether corporate turnaround has a relatively higher level of success if it were attempted earlier in the corporate life cycle, prior to the point that firms encounter net loss. This is an important contribution as it leads to focus on employing turnaround strategies before the firms encounter net loss. It helps identify turnaround strategies that can significantly affect successful turnaround within firms facing declining profits, relative to different stages of corporate life cycle’s decline phase. Additionally, the study attempts to address several deficiencies identified in previous studies in the existing turnaround literature, such as employing panel data to study turnaround, controlling for the effect of exogenous factors, and conducting sophisticated tests, such as Chow test (Chow 1960), Durbin–Wu–Hausman test (Durbin 1954; and Hausman 1978) and Simulation analysis (Law & Kelton 1991) relative to the theoretical contribution of the study. Consequently, this thesis contributes to theory by developing a robust model to investigate the application of

turnaround strategies relative to different extents of performance declines in listed SMEs.

This dissertation investigates whether a strategic framework can be constructed that will enable listed SMEs to cope with declining performance situations and return to match or exceed their most prosperous period of pre-downturn performance within a short period. In the existing turnaround literature, earlier studies have not focused on this aspect of turnaround relative to listed SMEs. The relation between different turnaround strategies and the firm's successful recovery are examined in an effort to construct an appropriate strategic framework. This framework may assist listed SMEs to overcome declining performance situations before getting into a crisis.

This brings us to the general research question of the study:

Which of the CEO change, cost of goods sold reduction, discretionary expenses reduction, operating revenue increase, and R&D expenditure, are the most significant determinants of successful turnaround relative to different extents of performance declines in listed SMEs during a short period of time?

2.5. Summary

While turnarounds are associated with extreme change and discontinuity, determining an appropriate turnaround strategy framework for listed SMEs to counteract performance decline situation while facing financial distress is critical for two reasons. First, the majority of research on corporate turnaround from performance decline are focused on large organizations. However, comparing to large firms, SMEs are relatively resource constrained. Although, the theorized turnaround procedures as retrenchment and recovery initiatives provide conceptual insights for financially distressed firms and turnaround practitioners, however, due to scarcity of resources available for SMEs during turnaround situations, the management of listed SMEs are often defensibly cautious in implementation of such guidance (Edwards, 2017). Second, one of the critical assumptions of turnaround as retrenchment and recovery

approach maintains that the decision point between the retrenchment and the recovery stages is driven by whether to continue the pre-distress strategy at a lower level of resource commitment (Edwards 2017). However, comparing to large firms, the typically lower resourced SME (Rosenbusch, Brinckmann, and Bausch, 2011; Van de Vrande et al. 2009) might be biased in determining the way to address their performance decline situations through avoiding the resource commitment, as well as the way to conduct retrenchment efforts as turnaround strategies. Therefore, with respect to the fact that time is perhaps the most vital factor when counteracting a financial distress (Tangpong, Abebe & Li 2015), it is critical to determine turnaround strategies for listed SMEs to address performance decline situations. Consequently, this dissertation builds on the corporate turnaround lifecycle model (Adapted from Kamel 2005) and develops frameworks of Short-term turnaround strategies pertaining to different extents of performance decline in listed SMEs.

Chapter 3

3. Data and Research Methodology

Through the use of large sample study, this research attempts to determine whether the corporate turnaround strategies, reported in the research literature, that significantly affect recovery from performance decline situations in large firms, are also applicable to different extents of performance declines in listed SMEs.

Figure 4 is the research model that demonstrates the linkage between the key variables of this study. The diagram shows that the costs of goods sold, and discretionary spending are employed as retrenchments strategies. Furthermore, in addition to retrenchment initiatives, CEO change, revenue increase, and financial restructuring variables are demonstrated to effect firm's performance during a turnaround process. The study's variables are discussed further in detail in the following sections in this dissertation.

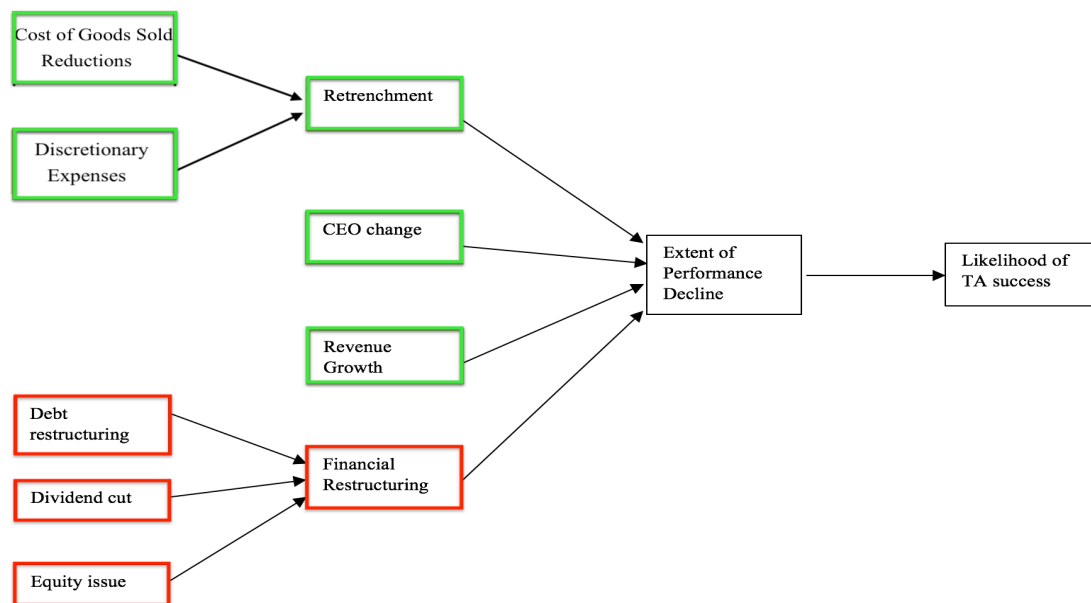


Figure 4. Research model.

The study identifies (a) CEO change, (b) reducing the costs, (c) increasing the revenue and (d) financial restructuring as the main recovery response mechanisms that would affect the success of turnaround. These were discussed in the previous chapter pertaining to studies of large firms. This research considers them as the key mechanisms for the success of short-term turnaround attempts relative to different extents of performance decline in listed SMEs. However, the financial restructuring variables, which includes “debt restructuring”, “dividend cut” and “equity issue”, are not investigated in this research, due to data availability constraints associated with SMEs.

For the purposes of this study, the “*short period*” of time is defined as 4-year rolling time frame, from 2000 to 2014, that will allow us to identify those listed SMEs that attempted a successful turnaround. The employed 4-year rolling timeframe is consistent with the 4-year time frame, which has been employed by Hambrick and Schecter (1983) to study turnaround in large enterprises and by Chowdhury and Lang (1993) and Sweet (2004) to study turnaround in small industrial firms (SIFs).

Equivalently, “*successful turnaround*” is defined as 2 successive years of positive net income following at least 2 successive years of net losses. The exact measure will be discussed further in detail in the next sections. Pertaining to declined firms that did not encounter net loss, relative to the different extents of decline from the respective firms’ profit apex, successful turnaround is defined as 2 consecutive years of upsurge in net income that exceed the upper limit of the firms’ respective decline spectrum, following at least 2 consecutive years of declined net income that falls below the thresholds of that decline spectrum. Successful turnarounds relative to declined firms that did not face net loss are further elucidated in the section 3.2.1.2 of this dissertation (figure 6).

To answer the general research question, several questions and relative hypotheses are further established to capture the ceteris paribus and joint effect of the CEO change, cost reduction, and revenue increase relative to different extents of the firms’ declines.

Therefore, the above research model will be evaluated based on the following sample research questions:

Q1. Which turnaround strategy or strategies significantly affect successful recovery within listed SMEs that encountered net loss?

Q2. Compared to SMEs in the manufacturing sector, which turnaround strategy or strategies significantly increase the likelihood of successful turnaround within listed SMEs in the service industry?

Q3. Within the listed SMEs that encountered net loss, which turnaround strategy or strategies increase the likelihood of successful turnaround for “Just-In-Time” (JIT) turnaround or “Smart Turnaround”?

Q4. For those listed SMEs that encountered net loss, is there a greater likelihood of successful turnaround if it were attempted earlier during performance decline phase, prior to the point that firms face net loss?

3.1. Data Collection

The strategic management literature is generally comprised of three major types of research: analysis of existing databases, surveys to establish a new database, and in-depth case studies (Krueger 1997). However, according to Krueger (1997) employing the existing databases maximizes the rigidity and accuracy of the results.

This study makes use of existing financial data of publicly listed SMEs from the Osiris Database in order to test the research hypotheses. A publicly cited firm on Osiris is defined as “a company with publicly listed equity” (Osiris 2018, p. 1). According to the Osiris (2018, p. 1), while there are other broader denotations exist for publicly listed companies, as they might also incorporate firms with listed bonds and other certificates, the employed definition by Osiris database affects the inclusion standards for firms on Osiris. The database includes financial information, ownership, ratings,

earnings estimates, stock data and news on globally listed public companies, including banks and insurance firms from over 130 countries.

The industrial company financial data on Osiris is supplied by WorldVest Base (WVB), Standard & Poor's, Zanders, the Economist Intelligence Unit, Factset, the Financial Times, Datamonitor D&BTSR, ktMINE, modeFinance, Bureau van Dijk, Moody's, Morningstar, Dow Jones, Vadis, Exchange Data International, as well as five regionally specialized providers; Edgar Online (USA), Reuters (USA), Korea Information Service (KIS), Huaxia International Business Credit Consulting Company (China), and Teikoku Databank (Japan) (Osiris 2018). The combined industrial company dataset contains as-reported and standardized financials, inclusive of restated accounts, for up to 20 years on approximately 89,000 listed firms (44,000 US including 2,800 OTC, and 45,000 non-US).

To be included in the sample for this study, firms must have met specific criteria. Firms must have number of employees less than 300 and annual turnover less than US\$ 15 million and assets less than US\$ 15 million, which are the criteria to distinguish SMEs from large firms, according to the IFC's definition of SMEs (IFC 2012). According to this definition, an organization must comply with only two of the three mentioned criteria in order to be categorized as SME. Of the companies available on Osiris database, 8,297 have less than 300 employees and annual turnover less than US\$ 15 million. Among all of the mentioned SMEs of the sample, 521 firms have all the information required for the construction of the variables in this study's research model pertaining to all types of turnaround - Smart, JIT and Survival. This sample provides us with 2,433 observations⁶ in total, prior to determining the types of turnaround attempted by declined listed firms. This sample is also interesting due to the growing concern and the importance attached to the function of publicly listed firms (Parker & Keon 1994), which directly affect the stock exchange markets of the firms' respective

⁶ With respect to the employed criteria in this research to distinguish listed SMEs from large organizations, based on the firms' number of employees together with their annual revenues, 521 companies of the sample had achieved successful turnaround. Therefore, the usable observations are for 521 companies for the years 2000 to 2014, which provided this research with 2433 observations in the end.

countries. Moreover, with respect to the critical role of the SMEs in the economic development of each country, it is crucial to investigate how these firms counteract their performance declines.

Companies that experience business earning less than their cost of capital can be considered to require turnaround (Hambrick 1985). Therefore, sample firms that fall within the category of SMEs must have experienced net losses in the first two consecutive years within every 4-year rolling time frame from 2000 to 2014. The two years of losses is consistent with the time frame being employed in previous researches by Hambrick and Schecter (1983), Robbins and Pearce (1992), Chowdhury and Lang (1993), Barker and Mone (1994), Chowdhury and Lang (1996b) and Sweet (2004).

The information related to the change of the CEO, age of the firms (incorporation date), as well as all financial data were also acquired from Osiris Database. The remaining data required in this research, related to GDP, inflation and industry information were collected from the World Development Indicators (WDI) of the World Bank (World bank, retrieved May 2015). GDP was collected for the years 2000 to 2014 in constant 2010 US\$. Using 2010 as the base year, CPI was employed for estimation of inflation and transformation from nominal to real value of variables.

3.2. Performance Measures and Definition of Variables

To be able to perform the analysis discussed earlier with the help of Figure 4 using the Osiris database, we further need to define the relevant variables in detail, as well as their expected relation to the dependent variable, which is the likelihood of a successful turnaround. The first step is to define the dependent variable, which is successful turnaround in our case.

3.2.1. Dependent Variable

3.2.1.1. *Binary Case*

Corporate turnaround is the dependent variable of the study. At this point the analysis is going to be divided into two parts. In the first part successful turnaround is defined

as a binary variable. Relative to the firms that encountered net loss, dependent variable is a dichotomous variable and is named as “Survival turnaround⁷”. This variable takes value 1 for successful turnarounds and 0 for unsuccessful turnarounds. Figure 5 demonstrates turnaround attempts pertaining to different extents of performance decline from the profit apex. An income time path described by points ABCD demonstrates one example of a successful Survival turnaround, where A and B reflect two years in a row of negative net income, and points C and D represent two consecutive years of positive net income (within the 4-year rolling time frame of the study from 2000 to 2014).

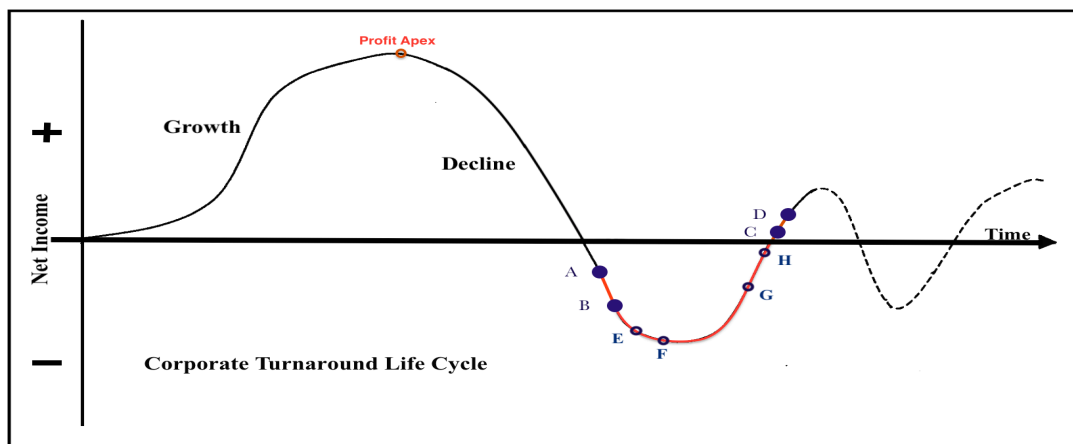


Figure 5. Survival Turnaround with Respect to Corporate Turnaround Life cycle

The income time paths ABEF and ABGH on the other hand represent unsuccessful turnarounds and would be classified as 0.

Consistent with Sweet (2004), the rationale for employing the net income to determine the successful turnaround is due to the critical role that cash money plays in the successful implementation of survival strategies during a turnaround process. Thus, employing the net income, as the measure for successful turnaround, reflects the performance of the declined SMEs during a turnaround process.

⁷ In order to distinguish between different turnaround attempts relative to different extents of decline from profit apex, the name “Survival turnaround” denotes turnarounds performed by firms that encounter net loss.

3.2.1.2. *Multinomial Case*

In terms of the declined firms that did not face net loss, the dependent variable is a polychotomous variable categorizing the type of turnarounds relative to different extents of decline from each firms' profit apex. For demonstration purpose, in order to better understand the polychotomous nature of the dependent variable, as well as different turnaround attempts relative to different extents of declines from the profit apex, we can employ the corporate turnaround lifecycle model, adapted from Kamel (2005) (As illustrated in figure 6). As demonstrated in figure 6, in terms of measuring other types of turnaround attempts, while firms face a performance decline, prior to encountering net loss, successful turnarounds are defined in terms of the extent of firm's profit decline from its relative profit apex. With respect to the corporate life cycle of a businesses, a local profit apex is considered as the point, relative to which, the extent of firms' declines and hence, their relative turnaround attempts are measured. In this study, profit apex is considered as the firm's highest recorded profit up to time, measured by net income, during the study period (2000 to 2014).

Having defined the profit apex for each individual firm, we can now describe different types of turnaround for firms that face declining income levels from the apex. i.e. time path EFGH is categorized as a successful Smart turnaround (classified as 1 in the data). Income time path IJKL, on the other hand, is categorized as a successful Just in Time (JIT) turnaround (classified as 2 in the data), whereas time path ABCD is classified as successful Survival turnarounds (categorized as 3 in the data). All other time paths, such as EFIJ, IJAB or EFKL, are categorized as cases of non-turnaround (and classified as 4 in the data).

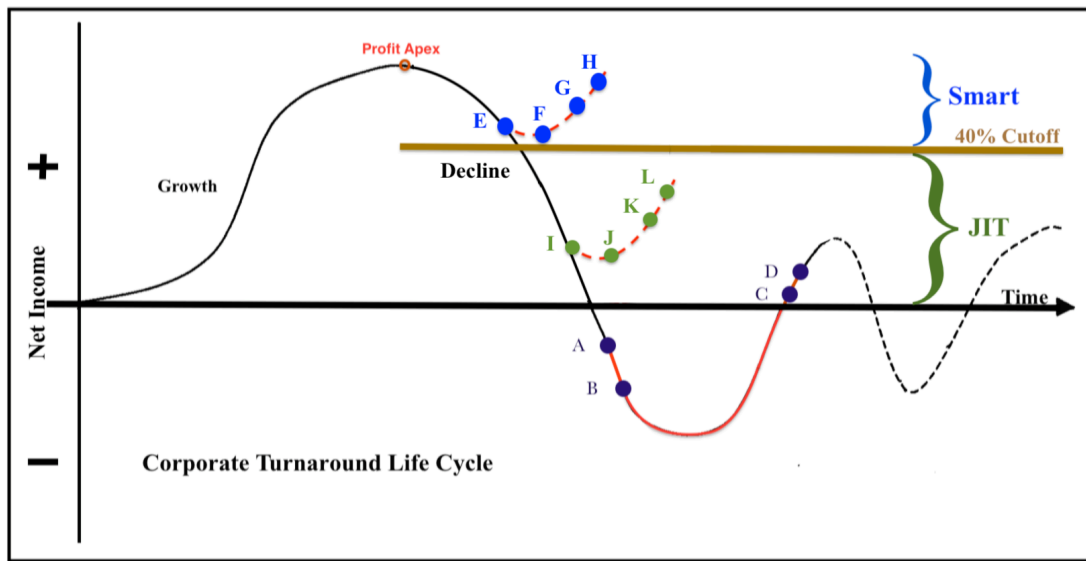


Figure 6. Smart vs. JIT turnarounds relative to Corporate Turnaround Life cycle

The 40% threshold (the cutoff point) was selected on the diagram for demonstration purposes only⁸. The mentioned arbitrary cutoff point is employed to distinguish between Smart and JIT turnarounds. “Smart” turnarounds represent turnarounds that attempted at relatively earlier stages (percentages) of decline from the profit apex (hence “Smart”), as compared to “JIT” turnarounds, prior to the points that firm encounter net loss. Compared to Smart turnarounds, JIT turnarounds can be defined as turnaround attempts that are performed at relatively later stages (percentages) of decline from the profit apex, before a declined company faces net loss. Employing an arbitrary (for now) cutoff point facilitates distinguishing between Smart and JIT turnarounds. Accordingly, with respect to the demonstrated cutoff point in figure 6, any time path for profits encountered above this 40% cutoff point is related to a Smart turnaround (or an unsuccessful attempt for a Smart turnaround), while any time path for the profits encountered below the 40% cutoff point belongs to JIT turnaround strategies (whether successful or unsuccessful).

⁸ The optimal cutoff value will be selected according to criteria that will be presented later on in this dissertation in section 4.1.2.

The logic for employing the profit apex as the point to measure the extent of a firm's decline is that, according to Hofer (1980), with respect to different sizes of firms and their industry of performance, firms have different growth potentials in terms of profit maximizations. Consistent with the existing strategic management literature, employing the percentages of declines, such as ROI decline from 20 percent to 30 percent to determine existence of turnaround situations or ROI increase from Minus 20 percent to zero as a measure for successful turnaround, have already been employed by Hofer (1980), Bibeault (1982) and Hambrick and Schecter (1983).

3.2.2. Independent Variables

3.2.2.1. *Cost of Goods Sold (Decrease)*

The first independent variable of the study is the “cost of goods sold-decrease” (Schendel, Patton & Riggs 1976; Ramanujam 1984; Robbins & Pearce 1992; and Michael & Robbins 1998). The cost of goods sold-decrease variable is a dummy variable equal to 1 for the firms that decreased their cost of goods sold, and equal to zero for the companies that did not manage to decrease their cost of goods sold. In other words, if the relative costs of goods sold from the last 2 consecutive years (within every 4-year rolling time frame) are less than their relative costs of goods sold of the first 2 consecutive years (within the same 4-year rolling time frame), cost of goods sold is considered to have decreased.

More specifically, to construct the dummy variable we first estimate: the cost of goods sold (COGS) as a percentage of operating revenue (OR) in the Year 3 (T3) and year 4 (T4) of the study's 4-year time frame, deducting the cost of goods sold as a percentage of operating revenue in the Year 1 (T1) and year 2 (T2) of their respective 4-year time frame (As illustrated in equation 1).

$$CGS_Decr = \left(\left[\frac{CGS_{T3} + CGS_{T4}}{OR_{T3} + OR_{T4}} \right] \right) - \left(\left[\frac{CGS_{T1} + CGS_{T2}}{OR_{T1} + OR_{T2}} \right] \right) \quad (1)$$

If the resulting value is negative, then the dummy variable is classified as 1 and if it is positive it is classified as 0. All values are measured in thousand US\$ as provided by the Osiris database but are deflated to constant 2010 US\$ to allow intertemporal comparisons. Employing this definition, as the measure for decreasing the cost variable, is consistent with Chowdhury & Lang (1996) and Sweet's (2004) definition of the same variable while studying corporate turnaround in small industrial firms. The justification for employing this measure is that, it provides a relative measure of costs, since the absolute measures of cost changes can be misleading if revenues are increased greatly or decreased during every 4 years of the study's time frame.

Pearce and Robbins (1993); and Slatter and Lovett (1999) declared that decreasing the costs is the first step in any turnaround attempt. This is because decreasing the costs provides declined firms with more cash and has the potential to utilize efficient employment of the remaining resources. Therefore, in terms of the expected sign for this variable, consistent with large successful turnaround companies (Arogyaswamy, Barker & Yasai 1995; Hambrick & Schecter 1983 and Hofer 1980) it is expected that decreasing the CGS positively affects successful turnaround in listed SMEs.

3.2.2.2. Discretionary Expenses (Decrease)

The second independent variable of the study is the "discretionary expenses-decrease" (Schendel, Patton & Riggs 1976; Ramanujam 1984; Robbins & Pearce 1992; and Michael & Robbins 1998). The discretionary expenses-decrease variable is a dummy variable equal to 1 for the firms that decreased their selling, general and administrative expenses, and equal to zero for the companies that did not manage to decrease these expenses. If the relative discretionary expenses from the last 2 consecutive years (within every rolling 4-year time frame) are less than their relative discretionary expenses of the first 2 consecutive years (within the same rolling 4-year time frame), discretionary expense is considered to have decreased.

More specifically, to construct the dummy variable we first estimate: The selling, general and administrative expenses (SG&AE) as a percentage of operating revenue

(OR) in the Year 3 (T3) and year 4 (T4) of the study's 4-year time frame, deducting the selling, general and administrative expenses as a percentage of operating revenue in the Year 1 (T1) and year 2 (T2) of their respective 4-year time frame (As illustrated in equation 2).

$$SG\&AC_Decr = \left(\left[\frac{SG\&AC_{T3} + SG\&AC_{T4}}{OR_{T3} + OR_{T4}} \right] \right) - \left(\left[\frac{SG\&AC_{T1} + SG\&AC_{T2}}{OR_{T1} + OR_{T2}} \right] \right) \quad (2)$$

If the resulting value is negative, then the dummy variable is classified as 1 and if it is positive it is classified as 0. All values are measured in thousand US\$ as provided by the Osiris database, but are deflated to constant 2010 US\$ to allow intertemporal comparisons. Consistent with Chowdhury and Lang (1996a) and Sweet (2004), the justification for employing this measure is that, it provides a relative measure of costs, since the absolute measures of cost changes can be misleading if revenues are increased greatly or decreased during every 4 years of the study's time frame. While reducing the expenditures provides declined companies with more resources to facilitate implementation of other turnaround strategies, similar to CGS_Decrease variable, we expect a positive sign for SG&AE_Decrease variable.

As a kind of organizations' cost, it is anticipated that in order for companies to upsurge the availability of resources, such as cash, with the intention to improve their chance of successful turnaround, declined listed SMEs may reduce selling, general and administrative expenses (SG&AE). Therefore, in terms of the sign for this variable is expected that decreasing the SG&AE positively affects successful turnaround in declined listed SMEs.

3.2.2.3. *Revenue Increase*

The third independent variable of the study is the "operating revenue-increase" (Hofer 1980; Hambrick & Schecter, 1983; Barker & Duhainie 1997; Boissoneau & Pearson 1998; and Balgobin & Pandit 2001Tvorik). The operating revenue information is obtained from the database for the first 2 consecutive years and is compared to the last 2 years within every 4-year time frame of the study for 15 years. The operating

revenue-increase variable is a dummy variable equal to 1 for the firms that increased their operating revenue, and equal to zero for the companies that did not manage to increase their operating revenue. Hence, if operating revenues in the last 2 consecutive years (within every rolling 4-year time frame) are greater than the first 2 consecutive years (within the same rolling 4-year time frame), operating revenue is considered to have increased.

More specifically, to construct the dummy variable we first estimate for every company: the average operating revenues (OR) in the year 3 (T3) and year 4 (T4) of the study's 4-year time frame, deducting the average operating revenues in the year 1 (T1) and 2 (T2) of their respective 4-year time frame (As illustrated in equation 3).

$$OR_Increase = \left(\left[\frac{OR_{T3} + OR_{T4}}{2} \right] \right) - \left(\left[\frac{OR_{T1} + OR_{T2}}{2} \right] \right) \quad (3)$$

If the resulting value is positive, then the dummy variable is classified as 1 and if it is negative it is classified as 0. All values are measured in thousand US\$ as provided by the Osiris database but are deflated to constant 2010 US\$. This definition has also been employed by Sweet (2004) to investigate the effect of increasing the market share, as a corporate turnaround strategy, relative to small industrial firms (SIFs). Consistent with Sweet (2004), operating revenues are absolute values, since the absolute upsurge or reduction in the operating revenue is the variable of interest.

Increasing the operating revenue upsurges the inflow of cash to the organization, thus helps a declined company to counteract its performance decline situation. As the result, in terms of the sign for this variable, it is expected that similar to large successful turnaround firms (Hofer 1980; Hambrick & Schechter, 1983; Barker & Duhainie 1997; and Balgobin & Pandit 2001), operating revenue increase positively affects successful turnaround in SMEs that faced a performance decline condition.

3.2.2.4. *CEO Change*

This research investigates the application of CEO change, as managerial restructuring, that were frequently stressed in the existing corporate turnaround literature relative to large organizations (Schendel, Patton & Riggs 1976; Bibeault 1982; Slatter 1984; Gilson 1989; Thain & Goldthorpe 1989; Grinyer & McKiernan 1990; and Murphy and Zimmerman 1993). CEO change (Castrogiovanni, Baliga, & Kldwell 1992) during the 15 years of the study (2000 to 2014), is a variable that is classified as 0 for the years prior to the first CEO change ($T < t_{b1}$) that occurs in the data, where t_{b1} refers to the year of the first CEO change in a total of T years. It is classified as 1 for the year the CEO changes at time ($T = t_{b1}$) and is classified as $T = T - t_{b1}$ for the years thereafter until the next CEO change when at $T = t_{b2}$ the variable takes the value 1 again. The process is repeated for as many CEO changes occur in the time frame examined for each company. Therefore, the value relative to the “CEO_Change” variable demonstrates the number of years that the CEO provides additional management service to the same company. For this variable, the information regarding the names, appointment date and resignation date related to the CEOs, or the highest position complying with the CEO in this sample, were acquired from the Osiris database, which enables us to determine if firms changed the CEO during the 15 years of the study.

In terms of the sign for the CEO_Change, a positive value would indicate that increasing the time a CEO is assigned to this designation (additional years of experience of the CEO within the same company) would increase the likelihood of a turnaround. Conversely, a negative value for this variable would indicate that a change in CEO (less experience within the same firm) would result in higher probability for a successful turnaround. As both a positive or a negative sign are likely, depending on whether experience within the company or new ideas are more effective, we hold no expectations for the sign of the variable on the likelihood of a successful turnaround.

3.2.2.5. *Control Variables*

In addition to the theoretical contribution of the study, previous turnaround studies did not employ variables to control for the effect of several exogenous factors on the application of turnaround in declined listed SMEs (Chowdhury & Lang 1996a; Sweet 2004). To address this gap in the existing turnaround literature, this study utilizes the richness of data in Osiris database and employs variables that enable us to control for the effect of several exogenous factors, such as age of the firm, the industry of performance, research and development expenditure (R&D), shareholders concentration ratio, number of employees, annual revenue and general economic conditions (GDP, inflation, etc.). While small firms are constrained by “liabilities of smallness” (Chowdhury & Lang 1993), and from the point that failure rate is significantly high among companies with less than five years old (Phillips & Kirchoff 1988), it is anticipated that increasing the age of the firms can positively affect successful turnaround in listed SMEs. Moreover, in terms of the “per capita GDP” variable, while an increased per capita GDP signifies growth in the economy and tends to reflect an increase in productivity (Acemoglu 2012), it is also anticipated that declined businesses have greater chance of success to counteract a performance decline situation when per capita GDP upsurges. Thus, in terms of the sign of the variables “Age” and “Per capita GDP”, it is expected that increase in age of the firms as well as the per capita GDP positively affects successful turnaround in listed SMEs. On the other hand, since short-term turnaround attempt is the focus of this research, according to Hofer (1980), reducing the R&D expenditure for short run can be considered to be of cost-cutting nature. This is because it may improve the efficiency of employing the remaining resources in a declined firm. Balcaen and Ooghe (2004), Barker and Mone (1994), and Robbins and Pearce (1992) also suggest reducing the R&D expenditure as a retrenchment initiative to reduce the costs in large companies during a turnaround attempt. Therefore, in terms of the sign of the “R&D” variable, it is expected that increasing the R&D expenditure negatively affects successful turnaround in listed SMEs during a short period (Table 1 in section 3.2.4. demonstrates a full list of these variables as well as their expected sign). Controlling for the effect of exogenous factors, while determining the application of turnaround strategies in

declined firms, is an integral part of any econometric analysis where *ceteris paribus* results are examined. Consequently, by employing several control variables to study turnaround, the results from this study are more reliable in terms of the *ceteris paribus* effects of turnaround/non-turnaround procedures, as well as the applicability of turnaround strategies relative to different types of turnaround attempts.

One of those variables requires further explanation. Many researchers consider the structural specifications of particular industries as a fundamental determinant of profitability (Oster 1990; Porter 1980; and Scherer 1980)⁹. Bain (1986), known as "the undisputed father of modern Industrial Organization Economics", refers to "market structure" as the key determinant of performance of the market. First developed by Bain (1959), the structure-conduct-performance (SCP) theoretical framework in the industrial organization economics suggests the presence of a deterministic association between market structure and profitability. According to this theory, the market environment, directly affects the market structure. Afterwards, the market structure directly impacts firm's economic conduct, which in turn affects its performance in the market (opcit). Correspondingly, in terms of the industry-specific performance differentials between companies Mason (1939) declares that the structural attributes of a particular industry directly affect firms' performance, as these attributes determine firms' behavior, such as the conduct and strategies, within that particular industry. Therefore, firms within different industries may respond differently to counteract a performance decline situation. As compared to the industrial organization economics, in which industry is considered as the center of attention, in the strategic management field the mainstream of focus is on the firm itself to elucidate profitability differentials (Hawawini, Subramanian & Verdin 2003). Although this research investigates firms' performance from the strategic management standpoint, referring to Mason (1939), Bain (1959), Porter (1980) Scherer, 1980, Bain (1986), and Oster (1990), it is also important to consider and control for the industry-specific performance differentials between firms. This is because, the nature of strategic change may be different in

⁹ Within the strategic management literature, Porter (1980) and Oster (1990) are referred to as major contributors from industrial organization.

service industries, as compared to the manufacturing sector (O'Neill 1981). Consequently, the sample is selected without any consideration to the industry type. However, in order to control for industry differences, the sample SMEs is grouped by industry type as guided by the Standard Industry Code (SIC) according to the following scheme:

- SIC: 01 to 39 → P&M (Production and Manufacturing)
- SIC: 40 to 48 → T&C (Transportation and Communication)
- SIC: 49 to 99 → S&T (Service and Trade)

This scheme of industry classification to control for the industry differences has also been employed by Kamel (2005) to control for the industry differences, while investigating the effect of corporate turnaround strategies, in bankrupt firms, on emergence from the Chapter 11- United States Bankruptcy Protection. The variable will take the form of 3 dummy variables out of which two will be included in the econometric model (to avoid perfect multicollinearity).

3.2.3. Summary of Dependent and Independent Variables

The main purpose of this research is to investigate the short-term application of reducing the costs, increasing the revenue, financial restructuring and CEO change relative to successful turnaround in listed SMEs. Therefore, the study investigates the frequency of the employment of these strategies within the successful turnaround of SMEs (As illustrated in table 1). Consistent with the literature, the frequency of the employment of turnaround strategies has also been practiced by Kamel (2005) to investigate the significance of the effect of turnaround strategies on the emergence from Chapter 11 United States Bankruptcy Protection. Table 1 demonstrates a summary of the incorporated variables into the regression model. Names of the variables, as well as their definition, assigned values, and expected signs are presented.

Table 1. Definition of Variables

Name of the variable	Summary explanation/definition of the variable	Abbrev	Value	Units measured in	Expected Sign
Corporate turnaround (Dependent variable)	Dichotomous variable relative to the firms that encountered net loss: (Survival turnaround). Polychotomous variable relative to declined firms that did not encounter net loss, categorizing different types of turnaround relative to different extents of decline from profit apex.		turnaround= 1 Non-Turnaround= 0 Smart= 1 JIT= 2 Survival=3 Non-turnaround=4		
CEO_Change	Dummy Variable – for each company it is equal to 1 for the year the CEO is changed, and then starts increasing till the new CEO is appointed	<i>CEO_Change</i>	1, 2, 3, ...		±
Operating Revenue (Increase)	Dummy Variable - Increased sales within the last 2 consecutive years, compared to the first 2 consecutive years, within every rolling 4-year time frame of the study from 2000 to 2014	<i>OR_Increase</i>	Yes=1 No=0		+
Cost of Goods Sold (Decrease)	Turnaround strategy - Dummy Variable - Reduced cost of goods sold within the last 2 consecutive years, compared to the first 2 consecutive years, within every rolling 4-year time frame of the study from 2000 to 2014	<i>CGS_Decrease</i>	Yes=1 No=0		+
Discretionary expenses decrease (Decrease)	Turnaround strategy - Dummy Variable - Reduced selling, general and administrative expenses within the last 2 consecutive years, compared to the first 2 consecutive years, within every rolling 4-year time frame of the study from 2000 to 2014	<i>SG&AC_Decrease</i>	Yes=1 No=0		+
Research and Development expense	Control variable _ determining if successful turnaround firms increased/decreased their spending on R&D in the last 2 consecutive years, compared to the first 2 consecutive years, within every rolling 4-year time frame of the study from 2000 to 2014	R&D		Millions of US\$ deflated to constant US\$ 2010	–
Shareholders Concentration Ratio	Control variable - Controlling for the concentration of shareholders. (CR4 : is the ratio of the sum of the four greatest shareholder percentages.) (CR20 : is the ratio of the sum of the twenty greatest shareholder percentages.)	<i>CR4</i> <i>CR20</i>		Percentage (%)	
Per Capita GDP	Gross Domestic Product (at purchasing power parity) per capita - Controlling for the effect of GDP on firms' performance	<i>GDPcap</i>		Thousand US\$ deflated to constant US\$ 2010	+
GFCdum	Dummy variable - Control for the effect of global financial crisis. It takes the value 1 for the year 2009, and 0 for other years.	<i>GFCdum</i>	Yes=1 No=0		
Age	Control variable - Controlling for the age of the firms	<i>Age</i>		Incorporati on date	+

Name of the variable	Summary explanation/definition of the variable	Abbrev	Value	Units measured in	Expected Sign
Production and Manufacturing Industry	Control variable - Controlling for the industry differences	<i>USSIC1</i>	Yes=1 No=0	Standard industry codes (SIC)	
Transportation and Communication Industry	Control variable - Controlling for the industry differences	<i>USSIC2</i>	Yes=1 No=0		
Service and Trade Industry	Control variable - Controlling for the industry differences	<i>USSIC3</i>	Yes=1 No=0		

Following to the provided information regarding the variables of the study, table 2 demonstrates the descriptive statistics for each variable employed in this research. The information regarding the mean, standard deviation, minimum and maximum values, within and between variabilities, as well as number of observations and companies pertaining to each variable are demonstrated in table 2.

Table 2. Variables' Descriptive Statistics

Name of the variable		Mean	Standard Deviation	Min	Max	Observations
Corporate Turnaround (Dependent variable)	Overall	0.0375	0.1900	0	1	N = 2433
	Between		0.0994	0	1	n = 521
	Within		0.1736	-0.4625	0.9541	T-bar = 4.6698
CEO_Change	Overall	0.7577	2.0412	0	13	N = 2433
	Between		1.7145	0	11.5	n = 521
	Within		1.0197	-8.4423	6.9243	T-bar = 4.6698
Operating Revenue (Increase)	Overall	0.5360	0.4987	0	1	N = 2433
	Between		0.3846	0	1	n = 521
	Within		0.3795	-0.3806	1.4360	T-bar = 4.6698
Cost of Goods Sold (Decrease)	Overall	0.2841	0.4510	0	1	N = 2433
	Between		0.3514	0	1	n = 521
	Within		0.3290	-0.6158	1.2008	T-bar = 4.6698
Discretionary expenses decrease (Decrease)	Overall	0.3083	0.4618	0	1	N = 2433
	Between		0.3654	0	1	n = 521
	Within		0.3235	-0.6082	1.2250	T-bar = 4.6698
Research and Development expense	Overall	4.2886	11.4625	-0.1	137.936	N = 2433
	Between		11.4290	0	106.9346	n = 521
	Within		4.9272	-50.9705	83.6256	T-bar = 4.6698
Four-Shareholders Concentration Ratio (CR4)	Overall	39.6512	61.3285	0.4	400	N = 2433
	Between		57.4469	0.4	400	n = 521
	Within		6.90e-15	39.6512	39.6512	T-bar = 4.6698
Twenty-Shareholders Concentration Ratio (CR20)	Overall	135.5437	311.9858	2	2000	N = 2433
	Between		291.3353	2	2000	n = 521
	Within		3.93e-14	135.5437	135.5437	T-bar = 4.6698
GFCdum	Overall	0.0994	0.2992	0	1	N = 2433
	Between		0.1677	0	1	n = 521
	Within		0.2807	-0.4005	1.0161	T-bar = 4.6698
Per Capita GDP	Overall	42.2419	3.6121	34.5406	46.4052	N = 2433
	Between		3.5533	34.5406	46.4052	n = 521
	Within		0.9206	39.5332	44.7285	T-bar = 4.6698
Age	Overall	15.9828	14.7880	0	121	N = 2433
	Between		14.1804	0	118	n = 521
	Within		2.4115	8.4828	23.5828	T-bar = 4.6698
Production and Manufacturing Industry (USSIC1)	Overall	0.5494	0.4975	0	1	N = 2433
	Between		0.4989	0	1	n = 521
	Within		0	0.5494	0.5494	T-bar = 4.6698
Transportation and Communication Industry (USSIC2)	Overall	0.0205	0.1417	0	1	N = 2433
	Between		0.1463	0	1	n = 521
	Within		0	0.0205	0.0205	T-bar = 4.6698
Service and Trade Industry (USSIC3)	Overall	0.4300	0.4951	0	1	N = 2433
	Between		0.4968	0	1	n = 521
	Within		0	0.4300	0.4300	T-bar = 4.6698

Note: "N" and "n" in the "Observations" column respectively represent number of firms and number of observations pertaining to each variable in the study.

With respect to the provided information in table 2, those variables that have non-zero between and within variability vary both in time and per company. For instance, the USSIC variables, which represent the industry of firms' performance, should not vary in terms of time. Therefore, the within variability for these variables are constant. On the other hand, variables such as Per capita GDP shows both between and within variabilities. That is because all US companies have the same per capita GDP information for a specific year, which is different from Canadian businesses for that specific year. Thus, the between variability for the per capita GDP variable is not constant. Yet the within variability for this variable signifies the differences between the per capita GDP through time (years).

Given the provided information, the functional form of the relationship between the variables of the study takes the following form:

$$\begin{aligned} \text{Turnaround} = f(\text{CEO_Change}, \text{CGS_Decrease}, \text{SG \& AE_Decrease}, \\ \text{OR_Increase}, \text{R \& D}, \text{AGE}, \text{CR4}, \text{CR20}, \text{GDPcap}, \text{GFCdum}, \text{USSIC}) \end{aligned} \quad (7)$$

Having reviewed the data collection procedure, the sampling design, the performance measures, as well as the incorporated variables of the study, the next chapter proceeds to elaborate on the econometric methods that are employed.

Chapter 4

4. Econometric Approach and Data Analysis

The data set this dissertation employed is a panel data set. “A longitudinal data set or panel data set is one that follows a given sample of individuals over time, thus provides multiple observations on each individual in the sample” (Hsiao 2003, p. 2). Employing panel data is valuable, as it provides the basis for observing several phenomena over multiple time periods for the same firms or individuals and facilitates comparison of specific phenomena over multiple time periods (Diggle et al. 2002).

Utilizing panel data sets for economic studies has a number of major benefits over typical cross-sectional or time-series data sets (Hsiao 2003). Compared to cross-sectional or time-series data sets, panel data are comprised two dimensions: a cross-sectional dimension and a time-series dimension. It provides the researcher with “a large number of data points, increasing the degrees of freedom and reducing the collinearity among explanatory variables, hence improving the efficiency of econometric estimates” (Hsiao 2003, p. 3). Furthermore, longitudinal data provide a researcher with the opportunity to investigate critical economic queries that cannot be approached employing time-series or cross-sectional data sets (Wooldridge 2001; and Hsiao 2003). Such data facilitate finding a solution to the magnitude of econometric issues that often emerges in empirical studies. Namely, the often-heard declaration that a research project discovers (or does not discover) particular effects is the existence of omitted (unmeasured or unobserved) variables that are correlated with explanatory variables (Hsiao, 2003). Employing panel data allows to partially control for some of the effects of those omitted (unobserved or unmeasured) variables (ibid).

This research employs panel data acquired for the years 2000 to 2014 (15 years). The panel data pertaining to the 521 companies¹⁰ employed in this research is unbalanced

¹⁰ Initially data from 1097 SMEs was collected, but given missing observations the sample had to be eliminated to 521 firms.

in the sense that, depending on firms' incorporation date and business process, some of the companies do not appear in the data set from the first year for the sample selection (2000), while others exited the panel data prior to the last year for the sample selection (2014) as they "graduated" to large companies that are exempted from the list of the SME. Furthermore, since there were missing values relative to the variables in the dataset, observations with any missing value were automatically removed by SAS throughout the analysis process. However, with the objective to maximize the number of observations available for our analysis, any missing data related to the firms' numbers of employees, which is the criteria to distinguish SMEs from large organizations, were replaced using "interpolation". Thus, mean values were employed when missing data was not located in the beginning or the end of the time period under study, but rather in between. For instance, with respect to the employed interpolation method, considering the below example:

Year	Variable X	Variable Y
2001	5	6
2002	7	9
2003		5
2004	9	
2005	3	

For Variable X the average of 7 and 9 is taken to replace the missing observation for the year 2003. However, for Variable Y the missing observation related to the years 2004 and 2005 are not replaced, and thus are removed from the analysis.

Utilizing this data, a two-part analysis is employed. In the first part, a binary logistic panel model is employed to determine the probability for successful turnaround for declined companies faced net loss (Survival turnaround). In the second part, the analysis process involves investigation of the probability of successful turnaround attempts pertaining to declined firms that did not encounter net loss (Smart and JIT turnarounds) using a multinomial panel random effects logistic model. The two models are further described in detail in the next section.

4.1. Data Analysis

4.1.1. Part 1- Binary Model

Relative to the nature of the variables, this research employs logistic regression method to estimate the results of survival turnaround. Logistic regression can be employed when the dependent variable of a study is a categorical variable and the predictor variable(s) are categorical, continuous, or both. In our case, and in this first part (survival turnaround), the dependent variable takes the form 1 and 0 for turnaround and non-turnaround respectively. The main purpose of using logistic regression is to model the probability of a particular company with specific characteristics and strategies to successfully turnaround. Logistic regression employs maximum likelihood estimation and its procedure reports estimates of odds ratios for independent variables. This regression model is a non-linear transformation of linear regression.

Relative to the study's research question, the regression model is as follow, where i represents the company and t represents the year in this research.

$$\begin{aligned} \text{Logit}(\text{TURNAROUND})_{i,t} = & \alpha_i + \mu_t + \beta_1 \text{CEO_CHANGE}_{i,t} + \beta_2 \text{CGS_DECREASE}_{i,t} \\ & + \beta_3 \text{SG\&AE_DECREASE}_{i,t} + \beta_4 \text{OR_INCREASE}_{i,t} + \beta_5 \text{R\&D}_{i,t} + \sum_{k=6}^n \beta_k X_{it} + \sum_{j=n+1}^{j=n+I} \beta_j Y_i \quad (8) \\ & + \sum_{p=1}^{s=m+I} \beta_s Z_t + \varepsilon_{i,t} \end{aligned}$$

α_i is the individual firm effect, $i=1\dots, I$, μ_t is the time effect, $t=1\dots, T$, and lastly $\varepsilon_{i,t}$ is the white noise disturbance term distributed randomly and independently. The dependent variable is a dichotomous variable classifying turnaround as 1 and non-turnaround as 0. *CEO-Change* is the first predictor variable and takes value 1 for the year that a firm changes the CEO and starts increasing until the new CEO is appointed (Also explained in section 3.2.2.4). *CGS_Decrease* is the second predictor variable and takes value 1 for the firms that reduced the cost of goods sold (as defined in the equation 1) and 0 for others. *SG&AE_Decrease* is the third predictor variable and takes value 1 for the firms that reduced the discretionary expenses (as defined in the equation 2) and 0 for others. *OR_Increase* is the fourth predictor variable of the study and takes

value 1 for the firms that increased the revenue (as defined in the equation 3) and 0 for others. *R&D* is the fifth predictor variable of the study. It is a continuous variable representing the extent to which firm spends in research and development. Vector *X* represents variables that vary across both company and time dimensions, such as age of the firm, four-greatest shareholders concentration ration (CR4), twenty-greatest shareholders concentration ration (CR20) and per capita GDP. Moreover, vectors *Y* signifies time-variant only variables, such as the dummy variable for the year of the global financial crisis (GFCdum). Furthermore, vector *Z* denotes the three industry classifications (USSIC) that change with respect to company only.

In terms of determining the appropriate estimation method relative to the utilized panel data set in this study, pooled ordinary least squares (OLS) may lead to biased results, as it ignores unobserved firm heterogeneity. For example, it is reasonable to believe that unobserved individual factors, such as economic factors specific to the firm, as well as industry or firm's specific operations practices, are most likely to affect its performance. Therefore, employing pooled OLS may not be the appropriate estimation technique for the panel data provided for this research. Within the logistic regression framework, the most commonly employed panel models, which control for the existence for such effects are the fixed effects (FE) model and random effects (RE) model (Baltagi 1995). In order to determine the appropriate estimation method, the study employs several tests to choose between pooled Ordinary Least Squares (OLS), Fixed Effects (FE) and Random Effects (RE) model within the logistic model specification. So as to decide between pooled OLS estimation and FE, the study employs F-test for Fixed Effects (Park 2011). It examines the null hypothesis that all fixed effects are jointly equal to zero. It is achieved by comparing fixed-effects estimates to those from pooled OLS regression.

Furthermore, with the objective to select between FE and RE estimation, we utilize Durbin–Wu–Hausman test (also called Hausman specification test) (Durbin 1954; and Hausman 1978). The test examines the consistency of an estimator whilst compared to an alternative, less efficient estimator that is previously identified to be consistent

(Greene 2012). In the case of panel data, it can be also used to determine the appropriate estimation method, given the FE and RE models. In this case, due to greater efficiency, RE is preferred under the null hypothesis whilst under the alternative, FE estimation is at least as consistent and hence preferred.

After choosing between the FE and RE models and obtaining the regression results using the logistic regression method, an analysis of odds ratios determines the results for the extent of the effect of each of the turnaround strategies on the probability of successful turnaround. Therefore, the analysis of the results determines whether each of the specific strategies increases or decreases the probability of successful turnaround attempt. Results of Maximum Likelihood (ML) estimation are reported with odds ratios for independent variables. For testing the hypotheses related to the parameter estimates, the study employs Wald's test statistics to test their significance. The Wald chi-square statistics determines the results for testing the null hypothesis that the coefficient (parameter) is 0. Equivalently, coefficients having p-values less than significance level of $\alpha=0.05$ are statistically significant. The sign of the coefficients of independent variables produced by Wald's test determines the nature (positive or negative) of the effect of each independent variable on the odds ratio of the probability of successful turnaround (dependent variable). However, in order to have more clear inferences about the extent of the effect of each predictor on the successful turnaround, we also consider the exponentiated value of the coefficients of independent variables. "When all other variables held constant, each exponentiated coefficient is the ratio of two odds, or the change in odds in the multiplicative scale for a unit increase in the corresponding predictor variable" (UCLA Institute for Digital Research and Education 2018). Therefore, the estimated exponentiated values determine the extent of the likelihood for having a successful turnaround as the result of the effect of each predictor variable, while holding other variables constant. Consequently, exponentiated values greater than 1, suggest that the specific predictor variable increases the likelihood of successful turnaround. Respectively, exponentiated values less than 1, means that the specific predictor variable decreases the likelihood of successful turnaround. Furthermore, the greater is the exponentiated value for a

specific predictor variable, the greater the likelihood to achieve successful turnaround as the result of the effect of that predictor variable.

4.1.2. Part 2- Multinomial Model

Relative to the declined firms that did not face net loss, the dependent variable is a multinomial variable categorizing the type of turnarounds as was shown in figure 6 earlier. It takes a value of 1 for Smart turnarounds, 2 for Just-in-Time (JIT) turnarounds, 3 for Survival turnarounds and 4 for non-turnaround attempts.

In this section, the first part of the analysis is to elucidate the multinomial regression procedure. Therefore, a set of results is produced using an arbitrary cutoff point (section 4.1.2.1). Once the process for employing an arbitrary cutoff point is discussed, section 4.1.2.2. elaborates on the process through which we determine the optimal cutoff value.

4.1.2.1. Part 2a- Arbitrary Cutoff Value

At this step of the analysis process, the multinomial logit panel is estimated for an arbitrary cutoff value, measured as a percentage of decline from firm respective profit apex, so as to demonstrate the difference in the interpretation of the results, as compared to the binomial model that was used for survival turnarounds.

In the decline stage of the corporate life cycle, from the profit apex up to the threshold that firm lose profit (zero net income), an arbitrary cutoff point is initially considered as the extent of firm's performance decline, measured in percentages. The decline stage of the corporate life cycle from the profit apex up to the zero net income threshold is divided into 100 separate, but equally scaled segments. Thus, each of the arbitrary cutoff points indicate the extent of firms' declines from their respective profit apex. From these 100 deviations from the profit Apex we arbitrarily chose one of them, i.e. 40% from profit apex to define the distinction between Smart and JIT turnarounds, which allows us to redefine the dependent variable.

Any firm specific income data above the 40% is considered as an attempted Smart turnaround; whereas any firm specific income data below the 40% cutoff from the profit apex and above the 0-profit line, encompass firms attempted JIT turnaround (As illustrated in figure 6 in section 3.2.1.2.).

With respect to the chosen arbitrary cutoff points and considering the 4-year rolling time frame from 2000 to 2014, successful Smart turnarounds are defined as two successive years of consistent improvement on net income above the arbitrary cutoff point, following at least two successive years of consistent decline in net income above the respective arbitrary cutoff point (within every 4-year time frame of this study). Accordingly, in terms of declined businesses that did not face net loss, successful JIT turnarounds are defined as two successive years of consistent improvement on net income below the arbitrary cutoff point, but above the zero-net income threshold, following at least two successive years of consistent decline in net income below the respective cutoff point and above the zero-net income threshold¹¹. The definition of successful turnarounds is consistent with the definition of successful turnaround employed by Hambrick and Schecter (1983) to study turnaround in large enterprises, and by Chowdhury and Lang (1993) and Sweet (2004) to study turnaround in small industrial firms (SIFs) while companies faced net loss.

The dependent variable in the multinomial panel logistic model consists of four categories of Smart turnaround, JIT turnaround, Survival turnaround, and Non-turnaround attempts. The “non-turnaround” category of the dependent variable is employed as the base (excluded) category. Consequently, the parameter estimates relative to the Smart, JIT and Survival turnaround are interpreted as compared to the base (omitted) category.

Consequently, the multinomial regression model estimates the likelihood of successful turnaround strategies employed by declined listed SMEs to affect successful Smart and

¹¹ These are presented with the help of diagrams in Chapter 5 to clarify the construction of the dependent variable in the multinomial specification.

JIT turnarounds, prior to the point they encounter net loss. This estimation procedure is conducted for all of the cutoff points from 1 to 99 percentages of decline from the profit apex and respectively, the application of turnaround strategies is further investigated for successful Smart and JIT turnarounds.

After considering an arbitrary cutoff, in the next step, this research attempts to discover the optimal cutoff threshold, through maximization of the probability of all successful turnaround attempts. The procedure related to determining the optimal cutoff threshold is further discussed in the following section.

4.1.2.2. Part 2b- Determining the Optimal Cutoff value and Reporting the Multinomial Results for that cutoff value

Given the procedure for considering an arbitrary cutoff point relative to all percentages of decline from the profit apex, a set of criteria is formed to estimate the optimal cutoff value. The optimal cutoff value is the optimal percentage of decline from the firms' respective profit apex, at which employing turnaround strategies maximizes the probability of the success for all turnaround attempts in the sample selected.

The study utilizes the maximization of the probability of success for all turnarounds collectively in order to estimate the optimal cutoff value. As it has never been addressed or adequately researched in the existing turnaround literature, as firms have relatively different growth potentials in terms of profit maximizations (Hofer 1980), part of the challenge in establishing criteria to investigate turnaround attempts is that there is no universal threshold level (Pennings and Goodman, 1977). However, relative to the theoretical contribution of this dissertation, discovering the optimal cutoff value addresses the mentioned gap in the turnaround management literature.

Once the optimal cutoff value is determined, this dissertation proceeds to estimate the multinomial panel regression model for that discovered optimal cutoff point (percentage) only, so as to estimate the parameters pertaining to Smart, JIT and Survival turnarounds. Subsequently, the estimated parameters for all categories of

turnaround are further interpreted only relative to the discovered optimal cutoff threshold. This will further be discussed and explained in the Results chapter (in section 5.2.1.) as it will be easier to communicate the procedure pertaining to determining the optimal cutoff threshold to the reader after the results are presented.

4.2. Brief Summary and Conclusion

As discussed in the “Performance Measure and Definition of Variables” section of this research, in terms of the quantitative analysis of the study, relative to the firms that encountered net loss, the dependent variable is a dichotomous variable classifying turnaround as 1 and non-turnaround as 0. (As illustrated in figure 7 - the red area below the zero-Net Income line). Therefore, the estimation proceeds through simple logistic panel regression. However, in terms of the theoretical contribution of the study, the results relative to different types of turnaround are incorporated through a grid-search process along with multinomial logistic regression (As illustrated in figure 7 – the red area above the zero-Net Income line). This contribution is not presented in the existing turnaround literature and has never been adequately researched (Kamel 2005). Furthermore, determining the application of turnaround strategies pertaining to different extents of performance decline in listed SMEs has not been conducted in the literature through multinomial logistic regression.

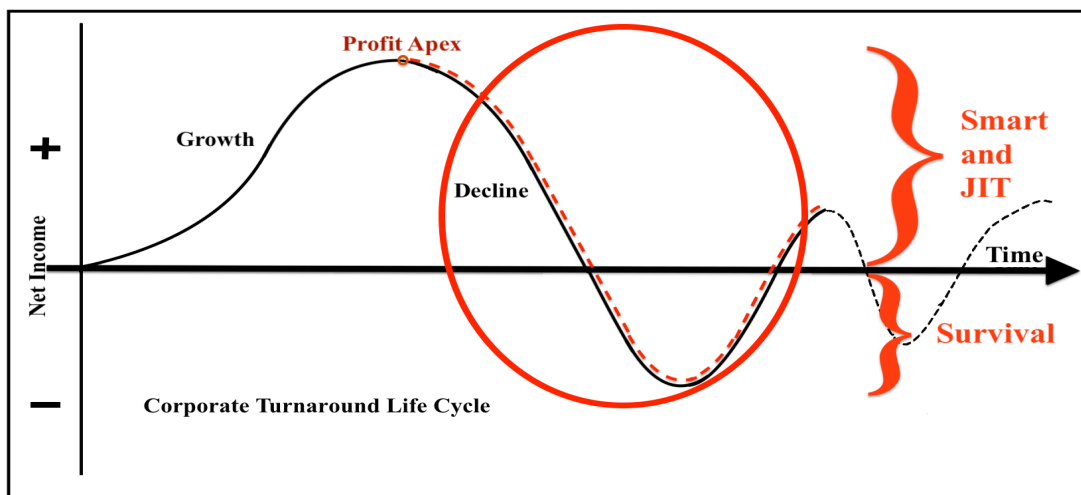


Figure 7. Smart, JIT and Survival turnarounds pertaining to Corporate Turnaround Life Cycle.

In terms of the data analysis procedure, this research consists of two parts. In *part 1* of data analysis process, the study investigates the short-term application of turnaround strategies relative to survival turnarounds that is when firms encounter net loss. With regards to survival turnaround, the dependent variable is a binary variable categorized as 1 for turnaround, and zero for non-turnaround attempts. In this case, relative to the dependent variable, the study employs panel logistic regression model to estimate the statistics.

In *Part 2* of the data analysis procedure, the study investigates whether corporate turnaround has a relatively higher level of success if it were attempted earlier in the corporate life cycle, within declined listed SMEs, prior to the point that firms lose profit. In this section, the study determines the short-term effect of turnaround strategies on successful turnarounds pertaining to different extents of performance declines in listed SMEs, prior to the point that firms encounter net loss. In this case, the dependent variable is a polychotomous variable, categorizing different types of turnarounds relative to different extents of performance decline from the firms' respective profit apex. The dependent variable is categorized as 1 for Smart turnaround, 2 for JIT turnaround, 3 for Survival¹² turnaround, and 4 for non-turnaround attempts. Accordingly, relative to the nature of the dependent variable, the dissertation employs multinomial logistic panel random effects regression model to estimate the results.

¹² While "Survival" turnaround represents turnarounds conducted by declined firms that faced net loss (the binary model, elaborated in section 4.1.1.), employing Survival turnaround as one of the categories in the multinomial regression model is to check for the robustness of the regression results.

Chapter 5

5. Results and Discussion

5.1. Part 1. Survival Turnaround

5.1.1. OLS vs. Random Effects (RE) vs. Fixed Effects (FE) Model

In this chapter the study elaborates on the estimation procedure to determine the results, as well as the findings of the research. The results for the binary logistic model for survival turnaround are demonstrated with the help of table 3 where 4 different regressions are presented. The first column displays the effects, parameter estimates relative to the OLS regression (column 2) while columns 3 through 5 demonstrate the FE, RE, and RE (robust) models.

Although, we will elaborate on model results later in this chapter; at this point it is sufficient to note that estimated coefficients are as expected. For example, in terms of the main variables of the research, results from the analysis of the RE (robust) model demonstrate that OR_Increase, CGS_Decrease and SG&AE_Decrease increase the likelihood of successful turnaround. Furthermore, reducing the R&D expenditure as well as lower CEO turnover demonstrate a positive impact on successful turnaround attempts.

Table 3. Impact of Turnaround Strategies on Survival Turnaround.

Parameter Estimates				
Effects	OLS	FE	RE	RE(Robust)
CEO_Change	0.0021	0.1848	0.0967	0.0967**
		1.2030	1.1015	1.1015
	(0.0015)	(0.1640)	(0.0596)	(0.0472)
Operating Revenue (Increase)	0.0213***	1.3514***	1.1866***	1.1866***
		3.8630	3.2760	3.2760
	(00067)	(0.5073)	(0.3557)	(0.3402)
Cost of Goods Sold (Decrease)	0.0234***	1.1295*	0.8961**	0.8961***
		3.0940	2.4500	2.4500
	(0.0074)	(0.5942)	(0.3737)	(0.3372)
Selling General and Administrative Expenses (Decrease)	0.0179**	2.6308**	1.0540**	1.0540**
		13.8853	2.8692	2.8692
	(0.0081)	(1.0743)	(0.4310)	(0.4515)
Research and Development Expenditure	-0.0005**	-0.4498*	-0.3051***	-0.3051***
		0.6377	0.7370	0.7370
	(0.0002)	(0.2503)	(0.1146)	(0.1099)
Four-Shareholder Concentration Ratio (CR4)	0.0001		0.0130	0.0131*
	(0.0002)		1.0132	1.0132
Twenty-Shareholder Concentration Ratio (CR20)	-0.0000		-0.0031	-0.0031*
	(0.0000)		0.9969	0.9969
Global Financial Crisis (GFC)	-0.0210**	-1.4777	-1.3193*	-1.3193*
		0.2282	0.2673	0.2673
	(0.0104)	(0.9469)	(0.7328)	(0.7250)
GDP per Capita (GDPcap)	-0.0037***	-0.4343	-0.1779***	-0.1779***
		0.6477	0.8370	0.8370
	(0.0010)	(0.2730)	(0.0574)	(0.0639)
Age of the Firm	0.0004*	0.03597	0.0075	0.00754
		1.0366	1.0076	1.0076
	(0.0002)	(0.1025)	(0.0088)	(0.0069)
USSIC 1	-0.0068		-0.2142	-0.2142
	(0.0071)		0.8072	0.8072
USSIC 2	-0.0195		-13.3944	-13.3944
	(0.0406)		0.0000	0.0000
Constant	0.1526***		2.4103	2.4103
	(0.0421)		11.1374	11.1374
Likelihood Ratio chi² (8)	44.91			
Prob > chi²	0.0000			
Wald chi² (11)	45.31			59.95
Prob > chi²	0.0000			0.0000
Observations (Groups)	2433 (521)	2433 (521)	2433 (521)	2433 (521)

Notes: Estimates, their exponentiated values and (standard errors) are respectively reported for each model relative to each of the effects. The study employs the exponentiated values relative to the parameter estimates to interpret the regression results. *Statistically significant at 10 percent; **significant at 5 percent; ***significant at 1 percent. Fixed effects, random effects, as well as the random effects (robust) models were estimated with “Xtlogit” command in Stata.

In order to better evaluate and choose amongst the models presented, a number of tests were first conducted to select the model, which are followed by a detailed discussion of the results of the “best” model in the following sections.

5.1.2.F-Test for Fixed Effects

To decide between the Fixed effects model and pooled OLS estimation, the study employs another F-test for fixed effects. In a regression of $y_{it} = \alpha + \mu_i + X'_{it}\beta + \varepsilon_{it}$ the null hypothesis states that all dummy parameters, except for one are equal to zero, $H_0: \mu_i = \dots = \mu_{n-1} = 0$, whereas, the alternative hypothesis considers that at least one of the dummy parameters of the regression model is statistically different from zero. This hypothesis can be tested using the F test, which is grounded on loss of goodness-of-fit (Park, 2011). This test compares the pooled OLS (efficient model) with the LSDV (robust model) and investigates the extent that the goodness-of-fit measures (SSE or R2) are altered.

$$\begin{aligned}
 F(n-1, nT-n-K) &= \frac{(e'e_{pooled} - e'e_{LSDV})/(n-1)}{(e'e_{LSDV})/(nT-n-k)} \\
 &= \frac{(R_{LSDV}^2 - R_{pooled}^2)/(n-1)}{(1 - R_{LSDV}^2)/(nT-n-K)} \\
 F(521-1, (521*15)-521-12) &= \frac{(54.4455-43.8283)/(521-1)}{(43.8283)/((521*15)-521-12)} = 3.4035
 \end{aligned}$$

Rejection of the null hypothesis determines that at least one group/time specific intercept u_i is statistically different from zero. Therefore, the fixed effects estimation is preferred over the pooled estimation and should be employed.

The F-test statistics results yield the value of 3.4035. With respect to the critical Alpha level of 0.01, $F(520, 7306) = 1.00$, we reject the null hypothesis of all dummy parameters, except for one for the dropped, are all equal to zero. Hence, we conclude that there is a significant fixed effect or significant increase in goodness-of-fit in the fixed effect model. Consequently, the fixed effect model is preferred over the pooled OLS estimation.

5.1.3. Pooled OLS vs Random Effects

However, one of the critical assumptions of the fixed effects model is that the time-invariant characteristics are unique to the individual and should not therefore be correlated with other individual characteristics. Each individual is different, therefore the individual's error term and the constant, which captures individual characteristics should not be correlated with other individual characteristics (Stock & Watson 2003; and Anna, Antonello and Angelo 2013). If the error terms are correlated, then fixed effects model is not appropriate since inferences from this estimation technique may not be correct and requires us to model that correlation using random-effects. We therefore need to examine for RE. The first step is to examine the RE vs Pooled OLS. For this purpose, we employ the Breusch-Pagan (LM) Lagrange multiplier test (Breusch & Pagan 1980) that investigates if individual (or time) specific variance components are zero, $H_0: \sigma_u^2 = 0$. The LM statistic follows the chi-squared distribution with one degree of freedom.

$$LM_u = \frac{nT}{2(T-1)} \left[\frac{T^2 \bar{e}' \bar{e}}{e' e} - 1 \right]^2 \sim \chi^2(1)$$

where e is the $n \times 1$ vector of the group means of pooled regression residuals, and $e'e$ is the SSE of the pooled OLS regression. The null hypothesis holds that there is not enough statistical evidence of random effects in data. Conversely, the alternative hypothesis assumes the presence of the random effects in data. The LM test formula yields the value of

$$\frac{521 * 15}{2(15-1)} \left[\frac{15^2 * 3.4428}{54.446} - 1 \right]^2 = 48834.40837$$

Since the critical value for the chi-squared distribution with one degree of freedom at Alpha level of 0.01 is 6.635, we reject the null hypothesis of no random effects. We conclude that there is significant evidence for the presence of random effects in data. Consequently, the RE model should be employed rather than pooled OLS.

5.1.4. RE and FE estimation. Hausman Test for FE vs RE

As we observe both RE and FE are superior over Pooled-OLS estimation. “A side effect of the features of fixed-effects models is that they cannot be used to investigate time-invariant causes of the dependent variables” (Kohler & Kreuter 2009, p. 245). “Random effects assume that the entity’s error term is not correlated with the predictor variables which allows for time-invariant variables” (Torres-Reyna 2007, p. 26), such as industry of operation or the economic conditions of the country, to play a role as predictor variables. “The rationale behind employing random effects model is that, in contrast to the fixed effects model, the variation across companies is assumed to be random and uncorrelated with the predictor variables included in the model” (Asefa 2017, p. 4). “...the crucial distinction between fixed and random effects is whether the unobserved individual effect embodies elements that are correlated with the regressors in the model, not whether these effects are stochastic or not.” (Greene 2008, p. 183).

Subsequently, the question of model selection arises. To decide whether the FE or RE model is appropriate, the Hausman specification test is employed to test the hypotheses in terms of bias or inconsistency of an estimator. This test is applied under the null hypothesis that individual effects are uncorrelated with the other regressors in the model. The null hypothesis of no correlation between regressors considers both Fixed Effects and Random Effects estimation methods as consistent, but the FE estimation is inefficient. Therefore, under the null hypothesis we need to employ RE model. The alternative hypothesis assumes that there is correlation between regressors, hence the FE estimation is consistent and RE estimation is inconsistent. The reason is that, unlike fixed effects estimator, “the random effects estimator assumes that the random effects are orthogonal to the regressors” (Schaffer 2003). If this assumption is wrong, the random effects estimator is inconsistent, but the fixed effects estimator is unaffected. Hence, it is reflected in a difference between the two set of coefficients. A large and significant Hausman statistic means a large and significant difference, and so we reject the null hypothesis of no correlation (use of RE model), in favor of the alternative hypothesis and the use of the FE model.

	Random Effects	Fixed Effects
$H_0: Cov(x_{it}, \delta_i) = 0$	Consistent and Efficient	Consistent and Inefficient
$H_1: Cov(x_{it}, \delta_i) \neq 0$	Inconsistent	Consistent

Table 4 shows the Stata output for the Hausman's specification test to decide between employing the fixed effects vs. random effects model.

Table 4. Hausman's Specification Test.

	Coefficients			
	(b) fixed	(B) random	(b-B) Difference	Sqrt (diag(v_b- v_B)) S.E.
dmcapp2	.1848305	.0967148	.0881158	.1527436
dorinc	1.351442	1.18662	.1648221	.3617161
dcgs_decr	1.129483	.8960948	.23333879	.4619176
dsgae_decr	2.630827	1.054039	1.576788	.9840056
resdev	-.4498363	-.3051472	-.1446891	.2225554
gfdum	-1.477699	-1.319334	-.1583351	.5997858
gdpcap	-.434297	-.1778908	-.2564062	.2669252
age	.035969	.0075443	.0284255	.1021399

b = consistent under H0 and Ha; obtained from xtlogit
B = Inconsistent under Ha, efficient under H0; obtained from xtlogit

Test: H0 different in coefficients not systematic

Chi2 (8) = (b-B) ' [(v_b-v_B) ^ (-1)] (b-B)
= **4.73**
Prob>chi2 = **0.7859**

Hausman specification test statistic yields the value of **4.73** at the **P-Value of 0.7859**. Therefore, there is not enough statistical evidence to reject the null hypothesis. Consequently, given the results from the Hausman's specifications test, as well as the Likelihood ratio (LR) test statistics, employing the random effects model is the preferred choice over the OLS and fixed effects model, as it enables us to also account for the variation and differences between sample firms throughout multiple time periods provided in this research allowing for consistency and efficiency of the estimates.

5.1.5. Interpretation of the Results of the RE Model for the Binary Choice

Up to this section we have determined that the random effects panel logistic model is the appropriate estimation technique to investigate the short-term effect of turnaround

strategies on successful turnaround in listed SMEs. The independent variables of the regression model associated with the main hypothesis of this research are: 1. OR_Increase, 2. CGS_Decrease, 3. SG&AE_Decrease, and 4. CEO_Change.

Regression results relative to the four presented models were demonstrated in table 3 (Section 5.1.1.). The Pooled OLS and FE models are reported for a simple robustness check. The RE model, which our analysis suggests we should employ, presents identical coefficients relative to the RE (robust) model for all variables of the regression model. However, the standard errors using the RE and RE (robust) models are different.

In the next step, the study tests for panel autocorrelation and heteroscedasticity using the Stata command Ordinal Generalized Linear Models (OGLM¹³) along with “hetero(variable)” command (Williams 2010), as it can be utilized to specify the variables considered to cause heteroskedasticity in heterogeneous choice/location-scale models. Heterogeneous choice (also known as location-scale or heteroskedastic ordered) models explicitly specify the determinants of heteroskedasticity in an attempt to correct for it (Williams 2009; Keele & Park 2006).

For an ordered variable y with M categories coded 1 to M , the full heterogeneous choice model (using logit link) can then be written as:

$$P(y_i > m) = \text{invlogit} \left[\frac{\sum_k x_{ik} \beta_k - k_m}{\exp(\sum_j z_{ij} \gamma_j)} \right] = \text{invlogit} \left[\frac{\sum_k x_{ik} \beta_k - k_m}{\sigma_i} \right], m$$

$= 1, 2, \dots, M - 1$

Where

$$\text{invlogit}(x) = \text{inverse logit function of } X = \frac{\exp(x)}{(1 + \exp(x))},$$

$$\exp(\sum_j z_{ij} \gamma_j) = \exp(\ln(\sigma_i)) = \sigma_i,$$

$$k_0 = -\infty \text{ and } k_m = \infty$$

¹³ The name is slightly misleading in the sense that OGLM, in addition to the linear models, can also estimate the nonlinear models (Williams, 2010).

The chi-square statistic estimated from the analysis of this model tests the hypothesis that any of the choice/location parameters or the heteroskedasticity/scale parameters is statistically different from zero. The heteroskedasticity test reveal the **Likelihood Ratio $\chi^2(15) = 82.38$** , with the **Prob > $\chi^2 = 0.0000$** . Therefore, we reject the null hypothesis of no heteroscedasticity in favor of heteroscedasticity.

When a binary or ordinal regression model erroneously assumes similar error variances for all individuals, the standard errors are wrong and (contrary to OLS regression) the parameter estimates are biased (Yatchew & Griliches 1985). Consequently, in order to take into account and handle heteroskedasticity, employing the Robust RE model is justified and required. The Robust RE model results are therefore discussed in the remainder of the analysis.

For ease of interpretation, regression results relative to the RE (robust) model are presented in table 5.

Table 5. Impact of Turnaround Strategies on Survival Turnaround

Parameter Estimates	
Effects	RE (Robust)
CEO_Change	0.0967** 1.1015 (0.0472)
Operating Revenue (Increase)	1.1866*** 3.2760 (0.3402)
Cost of Goods Sold (Decrease)	0.8961*** 2.4500 (0.3372)
Selling General and Administrative Expenses (Decrease)	1.0540** 2.8692 (0.4515)
Research and Development Expenses	-0.3051*** 0.7370 (0.1099)
Four-Shareholder Concentration Ratio (CR4)	0.0131* 1.0132 (0.0079)
Twenty-Shareholder Concentration Ratio (CR20)	-0.0031* 0.9969 (0.0019)
Global Financial Crisis (GFC)	-1.3193* 0.2673 (0.7250)
GDP per Capita (GDPcap)	-0.1779*** 0.8370 (0.0639)
Age of the Firm	0.00754 1.0076 (0.0069)
USSIC 1	-0.2142 0.8072 (0.2948)
USSIC 2	-13.3944 0.0000 (16.8213)
Constant	2.4103 11.1374 (2.4229)
Wald chi² (11)	59.95
Prob > chi²	0.0000
Observations (Groups)	2433 (521)

Notes: Estimates, their exponentiated values and (robust standard errors) are respectively reported relative to each of the effects. The study employs the exponentiated values relative to the parameter estimates to interpret the regression results. *Statistically significant at 10 percent; **significant at 5 percent; ***significant at 1 percent. The random effects (robust) model is estimated with “Xtlogit” command in Stata.

Later in this chapter, the regression results are further interpreted in detail with respect to the study’s research questions. However, as a succinct indication of the estimated statistics, the statistically significant P-Values relative to the estimates demonstrate that:

- increase in the Operating Revenue (OR) ($\exp(\text{OR}) = 3.2760^{***}$) improves the likelihood of short-term successful turnaround.
- Conversely, Cost of Goods Sold (CGS) ($\exp(\text{CGS}) = 2.4500^{***}$), Selling, general and Administrative Expenses (SG&AE) ($\exp(\text{SG\&AE}) = 2.8692^{**}$) as well as Research and Development expenditure (R&D) ($\exp(\text{R\&D}) = 0.7370^{***}$) should be decreased in order for listed SMEs that encountered net loss to have a higher probability for a short-term successful turnaround¹⁴.
- Furthermore, the significance of the parameter estimates relative to the CEO change variable ($\exp(\text{CEO_change}) = 1.1015^{**}$) demonstrate that for every additional year that CEO remains within the same firm increases the likelihood of successful short-term turnaround attempt.
- In terms of the shareholders concentration ratio variables, the four-shareholder concentration ratio ($\exp(\text{CR4}) = 1.0132^{*}$) positively affects successful survival turnaround during a short period. However, as shareholders concentration ratio decreases, the twenty-shareholder concentration ratio ($\exp(\text{CR20}) = 0.9969^{*}$) demonstrates a negative correlation with short-term successful survival turnaround.
- Additionally, the “Global Financial Crisis” variable ($\exp(\text{GFCdum}) = 0.2673^{*}$) that accounts for the year 2009, as well as the Per Capita GDP ($\exp(\text{GDP per Capita}) = 0.8370^{*}$), are negatively correlated with the likelihood of short-term successful turnaround.

In the following section of this research, the results relative to the statistically significant variables are discussed further in detail. However, age of the firm ($\exp(\text{age}) = 1.0076$), as well as the industry of firms’ operations ($\exp(\text{USSIC 1}) = 0.8072$) are not statistically distinguishable from zero, hence their results are not discussed in any further detail.

¹⁴ The definition of costs as “costs decrease” means that an exponentiated coefficient larger than 1 suggests that decreases in costs increase the likelihood for a turnaround. The definition of R&D as increase in expenses combined with a coefficient less than 1 suggests that decreases in R&D expenses increase the likelihood of a successful.

5.1.5.1. Results for research question 1

Q1. Which turnaround strategy or strategies significantly affect successful recovery within listed SMEs that encountered net loss?

CEO change:

As explained in the literature review section of this research, there is evidence that large successful turnaround organizations engage with change of their top management. For instance, Schendel, Patton and Riggs (1976), Bibeault (1982), Thain and Goldthorpe (1989), and Grinyer and McKiernan (1990) respectively reported that 80, 68, 70, and 85 percent of large successful turnaround firms appointed a new CEO. Therefore, consistent with the existing evidence in the literature, this study hypothesizes if the change of the CEO or top management significantly affects successful survival turnaround in listed SMEs. Results from the analysis of the regression model reveal that, unlike the findings of past research for large companies, for every additional year that the CEO or top management provides management service to the same listed SME, there is **1.10** times more likelihood of successful turnaround during a short period, holding all other variables constant. This variable is statistically significant (0.04) and we reject the null hypothesis at α -level of 5% (as reported in table 5).

As it is evident from the analysis of data, listed SMEs that attempted a successful turnaround in short period have less frequently engaged with the change of their top management. When SMEs face significant performance decline, it is critical for them to make strategic decisions toward efficient employment of their scarce resource, more specifically if they have not been profitable for at least two years (Chowdhury & Lang 1996; and Sweet 2004). While such firms require prompt managerial response to counteract their performance decline situation, decisions should be made wisely, quickly, as well as in line with the remaining scarce resources available to the firm (Moore, Nolan & Gillard 2006). Evidently, change of the top management is not the right decision in terms of survival turnaround attempts within a short time span. This corresponds with the fact that the new CEO does not have adequate information about

the current operating situation, as well as the resources available to the company. Consequently, a change of the CEO, does not significantly upsurge the chance of successful survival turnarounds in listed SMEs during a short period. More specifically, considering the short period of time available for the firms, the results suggest that it is the existing experience of the CEO that matters in successful accomplishment of survival turnaround attempts.

From another perspective, large organizations have well developed formal management systems and processes. In such companies a new CEO can get adapted the system quickly. Therefore, change of the CEO may not be detrimental in large firms during a turnaround situation. Moreover, large companies require major changes (layoffs, culture change, etc.) during a turnaround process as they are large, and thus new CEO could bring fresh ideas regarding the required changes. For instance, reducing the costs during a turnaround attempt would require significant layoffs, in which the new CEO can perform better as he/she has not yet developed prior relationships with other employees within the organization. On the other hand, as compared to large firms, SMEs would lack proper management systems and processes. As the result, implementing the required changes, such as layoffs, improving the employee productivity, etc., would be conducted through informal procedures. So, with the old CEO leaving the organization, lots of knowledge is lost and it would take more time for the new CEO to comprehend the way for implementing the required changes. Consequently, change of the CEO could relatively be more detrimental in SMEs during a turnaround attempt, as compared to large organizations.

Cost of Goods Sold (CGS) Decrease:

In terms of the Cost of Goods Sold (CGS) variable, the study hypothesized that reducing this cost can significantly affect successful turnaround in listed SMEs' survival while firms encounter net loss. As demonstrated in table 5, it is evident that, holding all other variables constant, a "decrease" in the CGS – as opposed to increasing the CGS – increases the likelihood of successful turnaround in listed SMEs by **2.45** times during a short period. The p-value is highly statistically significant

(0.008) and we reject the null hypothesis at α -level of 0.01. Employing this strategy is consistent with our expectation of the sign of this variable.

According to Pearce and Robbins (1993); Arogyaswamy, Barker and Yasai (1995); and Slatter and Lovett (1999), the first step in any turnaround effort is to decrease the costs. In this study, since short-term turnaround attempts are the case, in order for companies to successfully implement the strategies, the primary step in any operating turnaround attempt is to determine the resources required to implement the strategies (Chowdhury & Lang 1993; and Mone, McKinley & Barker 1998). Compared to large organizations, SMEs do not have vast resources and leverage and tend to focus on internal controls of operations and acquiring the right size for the organization (Boyle & Desai 1991; and Chowdhury & Lang 1993). However, SMEs facing net loss for a protracted period are scarce on resources. In order for such firms to provide more resources, it is critical for them to employ retrenchment initiatives, as retrenchment efforts provide opportunities to reduce outflow of cash by reducing expenditure. In order to reduce the costs, firms can typically reduce the number of employees, and moderate marketing and discretionary expenses (Schendel, Patton & Riggs 1976; and Hofer 1980). Relatively, improved administration towards decreasing the receivables as well as inventories are considered to be of cost-cutting nature, according to Hofer (1980) and Hambrick & Schechter (1983), as it improves the efficiency of employing the resources. However, in terms of different sizes of organizations, as well as their industry of operation, pursuing the way to reduce the costs may be different from one company to another. While previous research on corporate turnaround from performance decline combined all costs together (Kamel, 2005; Sweet 2004), this research distinguishes “cost of goods sold” from “selling, general and administrative expenses”, as well as the “research and development expenditure (R&D)” in order to have insight into how successful turnaround listed SMEs reduce different costs.

Selling, General and Administrative Expenses (SG&AE) Decrease:

In order to determine if successful turnaround listed SMEs have decreased Selling, General and Administrative Expenses (SG&AE) to survive, the study examined

whether reducing the SG&AE significantly affects successful turnaround in listed SMEs, while firms encounter net loss. As it is demonstrated in table 5, consistent with our expectation for the sign of this variable, results reveal that, given all other variables of the regression model are held constant, “*decrease*” in the SG&AE upsurges the likelihood of successful turnaround by **2.87** times during a short period. The p-value is statistically significant (0.02) and we reject the null hypothesis at α -level of 0.05.

As a type of organizations’ cost, it was expected that, in order for companies to increase the availability of resources with the objective to upsurge their chance of survival, declined listed SMEs may reduce selling, general and administrative expenses (SG&AE). SG&AE are costs incurred to 1) promoting, selling, and delivering a business's products and services, and 2) managing the overall business. As opposed to product costs, SG&AE appears as operating expenses on the income statement pertaining to the period in which the expenses occurred, which means that they are not allocated to the goods in inventory or to the cost of goods sold. Therefore, these costs are considered as period costs, such as marketing initiatives, sales commissions, promotional items, compensation of the employees as well as payments for utilities, rent, etc.

In order to employ the remaining scarce resources available to the organization more efficiently, successful survival turnaround listed SMEs have significantly reduced selling, general and administrative expenses (SG&AE) in addition to decreasing the direct costs attributed to the production of goods sold (CGS). Reducing the CGS together with SG&AE helps declined listed SMEs that encountered net loss to acquire more resources for implementation of other turnaround strategies. While declined firms should reduce the “administrative” costs incorporated in SG&AE (Arogyaswamy 1992), they can utilize marketing initiatives in order to boost sales while facing significant performance declines (Hofer 1980). Consequently, due to the fact that SMEs have very limited resources (Chowdhury & Lang 1993), reducing the general and administrative expenses seems imperative during a Survival turnaround. The reason is that these expenditures are comparable to overhead expenses, and

reducing the overhead can provide declined firms with the opportunity to efficiently employ their remaining resources, more specifically while companies have not been profitable for an extended period.

Research and Development Variable (R&D):

Research and Development (R&D) is an operating expenditure on the income statement. From a general perspective, prior to determining the results, two possible effects could be discussed in terms of this variable. A positive effect of increase in R&D expenses can be expected in the long run as the main purpose of R&D is innovation (Hofer 1980; and Kamel 2005) that will eventually pay off. In the short run however, we could expect that during a period of crisis (D'Aveni 1989; Castrogiovanni & Bruton 1992 Chowdhury & Lang 1996; Daniel et al. 2004), since SMEs are relatively scarce on resources, increased R&D expenses that are not expected to benefit the company in the short run may negatively affect the likelihood for a successful turnaround. Consequently, the study hypothesized that, similar to large successful turnaround companies (Morrow, Johnson & Busenitz 2004; Balcaen & Ooghe 2004; Barker & Mone 1994; Robbins & Pearce 1992; Hambrick & Schechter 1983; Bibeault 1982), decreasing the R&D expenditure may positively affect successful short-term turnaround in listed SMEs that encountered net loss. The results reveal that, holding all other variables constant, for every 1 million US\$ "decrease" in R&D expenditure, the likelihood of successful turnaround will be increased by **1.36** times ($1/(\exp(R\&D) = 1.3568)$) during a short period. The p-value is highly statistically significant (0.005) and we reject the null hypothesis at α -level of 0.01. As R&D is recorded as a type of cost on the income statement (Hall 2012), employing this strategy is consistent with our expectation of the sign of this variable.

R&D expenditure is incurred in planned research for new knowledge and in translating such knowledge into new products or procedures. It is one of the most critical items to take into consideration for investors, especially when considering public listed firm. Since SMEs have very limited resources, the results from the analysis of data determined that, listed SMEs that successfully attempted survival turnaround have

significantly reduced R&D expenditure in the short-run in order to employ their remaining scarce resources more efficiently (table 5). However, reducing the R&D expenditure does not necessarily mean that companies should not rely on the benefits associated with employment of R&D initiatives, as R&D plays a critical role in the success of the business. But rather it implies that companies attempting a survival turnaround can employ R&D initiative more efficiently and in a planned effort in line with their core business operations, as well as their current operating condition. While the results of the Business research, development and innovation Survey (BRDIS) sponsored by National Science Foundation of the United States (NSF) elaborate that firms that engage with or fund R&D have a far greater prevalence of innovation than companies without R&D initiatives (NSF 2012), investment in R&D can benefit the organization in long run (Hofer 1980). In short run however, R&D initiatives would lead to immediate expenses without immediate outcome. Therefore, increasing the spending on R&D may not be the right decision during short-term survival turnarounds in listed SMEs.

When firms face declining performance, in order for companies to employ their resources more efficiently by decreasing the R&D expenditure, it is required for them to assess their current operating condition. According to Hofer (1980), regarding short-term technological position, two separate evaluations are inevitable. The first is to determine whether there are any new or modified products the development of which could be accomplished in one year if all the company's R&D initiatives were dedicated to them. If this is the case, then the sales/profits of such commodities should be contemplated as one of the turnaround alternatives. Otherwise, little or none of the organization's resources should be allocated to product innovation for short run, unless a firm has access to external monetary resources, such as a parent company to pay for such initiatives. The second technological assessment that a declined firm should conduct is of the relative quality of the firm's products (ibid). If these are about average, there is no need to change the quality condition for in the near term. Conversely, if the relative quality of the firm's products is considerably exceeding average, then the company should make provision for the introduction of a lower-quality line by

employing inferior-quality components or fewer features than in its existing line to take advantage of its quality image.

However, the extent to which declined companies should decrease R&D expenditure may vary from one organization to another based on the industry of their operation. Businesses vary in “R&D intensity” (measured by the ratio of domestic R&D performed and paid for by the company to domestic net sales) relative to industry and size. In 2008, the ratio across all businesses within the scope of BRDIS was 3.0% in total, 3.5% for manufacturing companies and 2.2% for firms in nonmanufacturing industries (National Science Board, 2012). Thus, in industries with high “R&D intensity”, R&D plays a critical role and substantial decrease in R&D expenditure could lead to loss of competitiveness.

As an alternative strategy to decreasing the R&D expenditure, declined firms can utilize outsourcing opportunities to conduct R&D (Lewin & Peeters 2006). Listed SMEs that were not profitable for a protracted period require dramatic changes to cope with their declining performance. The resource dependency theory (Pfeffer & Salancik 1978) elucidates change with regard to external environment relationships. The basic argument of this theory is that an evaluation of inter-organizational relations within the network of the organization can provide managers with insight to comprehend the strength and weaknesses of relationships that exist between their organization and other network actors (Hatch 1997). As a change initiative mechanism, while declined firms should not neglect the important role of the R&D initiatives in the success of their business, by means of conducting a thorough analysis of an organization’s internal and external dependence on certain resources, declined listed SMEs can employ a strategy to capitalize on their strength by establishing an alliance with other companies for their R&D, which would be less costly as compared to doing it in-house (Murphy 2004; and Gilbert, Xia & Yu 2006).

Operating Revenue (OR) Increase:

In terms of the operating revenue (OR) variable the study hypothesized that similar to large successful turnaround firms (Hofer 1980; Hambrick & Schechter, 1983; Barker & Duhainie 1997; and Balgobin & Pandit 2001), operating revenue increase may positively affect successful turnaround in SMEs that encountered net loss. The results demonstrate that, consistent with our expectation of the sign of this variable, holding all other variables constant, “increase” in the OR¹⁵ in listed SMEs upsurges the likelihood of successful turnaround by **3.28** times during a short period. This variable is highly statistically significant (0.000) and we reject the null hypothesis at α -level of 1% (table 5). Thus, increasing the sales and maximizing the revenue is significantly associated with the success of short-term Survival turnaround in listed SME. According to Hambrick and Schechter (1983), turnaround performance is significantly associated with increase in market share. Similarly, Barker and Duhaime (1997) claims that large turnaround organizations have a significantly greater sale than large non-turnaround companies. Thus, consistent with large successful turnaround companies, the findings from this research determine that increasing sales help declined listed SMEs to successfully recover from a short-term survival turnaround situation.

Hofer (1980) asserts that, a revenue-increasing strategy is an effort to upsurge sales by conducting the combination of product (re-)introductions, augmented selling initiatives, increased advertising, and price reductions. Although, reducing the costs may be sufficient where the firm is weak operationally (Kang & Shivdasani 1997); however, since SMEs have limited resources, it is critical for their survival to employ strategies in order to generate and promote sales and upsurge inflow of cash, more specifically when they encounter net loss. Revenue generating strategies may be employed focusing on existing lines of products, administering price-cuts - or increasing prices where products are price insensitive (“price elastic Vs. price inelastic”)- and increasing marketing expenditure to stimulate demand (Hofer 1980)¹⁶.

¹⁵ Let us remind the reader that the OR variable is a dummy variable that measures either increase (classified as 1) or decrease (classified as 0) of the OR. There are no results that can be associated to the size of the OR increase/decrease.

¹⁶ Due to data availability constraints, revenue-generating strategies are not explicitly studied in this

As theoretically discussed by Hofer (1980), a comparison of a typical one- or two-level share-increasing strategic turnaround with a typical revenue-increasing operating turnaround should help to elucidate why companies employ different response mechanisms to counteract their performance declines. In the share-increasing strategic turnaround, companies would typically capitalize substantially on R&D, develop a new line of products, slightly increase the number of employees in expectation of future growth, and very likely alter their product distribution approaches and/or change the basic character of their manufacturing procedure. Although, companies that employ share-increasing strategic turnaround may not acquire a dramatic growth at the very early turnaround process, as these initiatives are intended to be employed for long period; their sales would increase for a period of several years prior to decelerating, as the company reaches its new share position. In contrast, revenue-generating operating turnarounds (Hofer 1980) are principally intended to upsurge firm's current profit, which is in congruence with the case of survival turnaround listed SMEs in this research. The major focus would be on short-term revenue generating initiatives, as the attempted endeavors may have little or no advantage relative to the strategic health and performance of the organization for long-run. As such, the existing line of products would be the primary consideration (Hofer 1980; and Scherrer 2003). Nevertheless, firms engaging with operating turnarounds might supplement the existing lines of products with commodities they used to produce, since these discontinued merchandises can be reintroduced to the market quickly and profitably. Likewise, companies might engage with the production of goods that they might never had the intention of producing them for a long period, if such commodities facilitate greater utilization of their resources.

Alternatively, an effective pricing strategy during a turnaround process plays a critical role during the recovery response (Finkin 1985). So as to upsurge the current sales level, companies would engage with price-reduction initiatives, increased direct selling

research. As discussed in the research methodology chapter of this study, operating revenue increase is employed as a proxy for revenue generating strategies (Sudarsanam & Lai 2001; and Sweet, 2004)

efforts, and increased advertising. Reducing the prices relative to lower quality products, as well as increasing the price when products are price insensitive can be administered to stimulate sales (Hofer 1980; Finkin 1985; and Scherrer 2003). However, employing such initiatives should be carefully deliberated, as they subject to long-term implications on the firm's image in terms of the quality of its products. For instance, the Packard company, which was known as the manufacturer of luxury vehicles, ruined its image by producing a lower-quality "Packard" model in order to cope with the financial depression¹⁷.

Shareholder Concentration Ratio Variables (CR4 and CR20):

From the analysis of the regression model it is evident that the four-shareholder concentration ratio (CR4), which is the total shares owned by the four greatest shareholders in each of the listed SMEs of the sample from 2000 to 2014, demonstrates positive correlation with the likelihood of successful turnaround. The regression results relative to CR4 variable demonstrate that the higher the four-shareholder concentration ratio, the greater is the likelihood of a successful turnaround during a short period. The exponentiated coefficient suggests that, holding all other variables constant, every percentage point increase in the CR4 upsurges the likelihood of successful turnaround by **1.013** ($\exp(\text{CR4})$) times during a short period. The p-value of 0.099 suggests that the four-shareholder concentration ratio variable is statistically significant at α -level of 0.10. Conversely, in terms of the twenty-shareholder concentration ratio (CR20), which is the total shares owned by the twenty greatest shareholders in each listed SME of the sample, regression results reveal a negative correlation between the CR20 and the likelihood of successful turnaround in listed SMEs. As demonstrated in table 5, holding all other variables constant, for every percentage decrease in the shares owned by the twenty greatest shareholder concentration ratio, it is **1.003** ($1/(\exp(\text{CR20}))$) times more likely that a declined listed SME accomplishes a successful turnaround during a short period. The p-value is statistically significant (0.099) and we reject the null hypothesis at α -level of 0.10. According to the regression results, as shareholder

¹⁷ This instance, and many other cases alike, would suggest employing a different brand name while a company strategically engages with the production of a product the quality of which, is conceived to be different from the perception of the company's image.

concentration ratio within declined listed SMEs is increased from CR20 to CR4, the likelihood of successful survival turnaround during a short period is increased. Thus, improving the ownership concentration (i.e. decreasing the numbers greatest shareholders from 20 to 4) results in greater likelihood of successful turnaround in listed SMEs within a short time span.

These results can be justified through Shleifer and Vishny's (1997) finding, which determined that in terms of equity dispersion, relatively smaller shareholders tend to express a "free rider" behavior. Erkens, Hung and Matos (2012) determined that companies with relatively increased independent boards, as well as greater institutional ownership tend to confront worse returns during a crisis situation. Improving the proprietorship concentration can encourage large shareholders to actively engage with the decision-making procedures within the company with the objective of maximizing shareholder wealth. Active participation of shareholders in the supervision of the organization's business management can enhance the efficiency of the governance, consequently ameliorating performance (Shleifer & Vishny 1997). Similarly, Gutierrez and Ttibo (2004) discovered the significant positive correlation between the number of large shareholders and firm's corporate performance in large organizations. Ttibo (2004) asserts that at a set proportion of shareholding, the number of large shareholders boost company performance. Likewise, Dalin (2014) studied a sample of listed firms in Chinese stock exchanges from the year 2009 to 2011 and determined the positive significant correlation between shareholder concentration and firms' performance. Furthermore, provided that the focus of survival turnaround is on declined listed SMEs that have not been profitable for an extended period, the decision-making process for implementing turnaround strategies should be fast. This is because such businesses have already confronted a severe declining performance, thus they are scarce on available resources (Kamel 2005). As the result, prompt response to counteract their declining performance situation is crucial for the livelihood of these firms (Moore, Nolan & Gillard 2006). If fewer shareholders are in charge of major control of a business at corporate level, it tends to support faster decision-making process. Consequently, as the focus of this research, in terms of the

short period of time available to declined listed SMEs to accomplish a successful survival turnaround, improving the concentration ratio can help companies to make managerial decisions toward counteracting their performance decline more efficiently, as well as in a timely manner, which can significantly upsurge the likelihood of successful turnaround.

Global Financial Crisis (GFC):

This control variable is a dummy variable equal to 1 for the year of the global financial crisis (2009) and else zero. As expected, regression results (Table 5) reveal a negative effect of the global financial crisis on short-term successful survival turnaround in Listed SMEs. Holding all other variables constant, the likelihood of successful survival turnaround in listed SMEs during a short period is **3.74** ($1/(\exp(\text{GFC}))$) times greater in any year of the study from 2000 to 2014 than the year 2009. The P-value is 0.069, and this variable is statistically significant at α -level of 0.10. As expected, holding everything else constant, companies had a more difficult time to successfully turnaround during a period of crisis. This finding can be explained in light of the relative greater dependence of SMEs on resources from external environment, due to their size, as compared to large organizations. While SMEs have very limited resources (Chowdhury & Lang 1993), harsh external environment condition, such as global financial crisis, hampers firms' access to external resources and negatively affect success of turnarounds, more specifically for firms that have not been profitable for a protracted period, as in the case of listed SMEs attempting Survival turnaround. Conversely, whilst large organizations have greater internal resources, as compared to SMEs, harsh external environment situation may not affect them as much as it affects SMEs.

GDP Per Capita:

As explained in the “definition of the variables” section of this research, the GDP per Capita is a continuous variable and is measured in thousands of US\$. In terms of listed SMEs that managed to successfully accomplish a survival turnaround during a short period, for every 1,000 US\$ “decrease” in the Per Capita GDP, the likelihood of

successful turnaround is increased by **1.19** ($1/(\exp(\text{GDPcap}))$) times (table 5). This variable is highly statistically significant at α -level of 0.01 (P-value = 0.005).

Increased per capita GDP is an indication of the growth in the economy (Henderson, Storeygard & Weil 2012) and suggests an increase in productivity (Acemoglu 2012). Therefore, it was anticipated that declined businesses have greater chance of success to counteract a performance decline situation when per capita GDP upsurges. However, inconsistent with our expectation for the sign of this variable, increase in per capita GDP decreases the probability of successful turnaround. Per capita GDP is the value of all final goods and services produced within a country (GDP) in a given year divided by the average population for the same year. While different countries demonstrate different GDPs, inflation rates and population for each year, the study employed the Per Capita GDP variable in order to take into account and control for the effect of such differences on the success of turnaround attempts by listed SMEs. As such, while findings from this research indicate the negative effect of the per capita GDP on firms' performance during survival turnarounds, it can also suggest that per capita GDP could be considered as an endogenous variable, rather than exogenous factor affecting firm's performance. Correspondingly, this finding also implies that decreasing per capita GDP may force businesses to become export oriented, thus forcibly opens a declined listed SME to new market opportunities. This effect might be due to the consumption patterns/changes of people.

Though, GDP is a macroeconomic measure of the potency of business, relative affluence of workforces and the overall robustness of the economy (Lawless 2009; and Henderson, Storeygard & Weil 2012). As an economic indicator, GDP is employed by companies and investors to determine efficient capital utilization approaches. While government entities employ GDP evaluation mechanisms to control and regulate the economy, businesses utilize the GDP data to make strategic business decisions in spite of the government's interventions. Firms employs GDP integers to evaluate business opportunities domestically with the objective to develop their cash deployment strategies. For instance, in economic slowdown a business entity will save more cash,

in case revenues continue to decline. Moreover, management assesses capital expense schemes based on GDP statistics and may not capitalize on plant and equipment during recessionary periods. Conversely, growth of GDP stimulates greater investments and builds confidence, thus business feels comfortable to increase their spending on developing their operations, hiring new employees, purchasing new equipment and constructing new plants. These mechanisms are what drive economic growth in any country which is accomplished through the establishment of career opportunities, which results in increased consumption through greater demand for commodities and services by the people in that country.

However, as the focus of this research, in terms of the short-term survival turnarounds, listed SMEs that lost profit for a protracted period are scarce on resources as well as cash. Though, unlike other companies that operate normally, they might not be able to employ strategies that are dictated by the changes in the economy. As the regression equation statistics reveal, increase in Per capita GDP demonstrates a negative correlation with short-term successful survival turnaround in listed SMEs. This finding corresponds with the fact that when Per capita GDP of a country increases, the relative living standards of the people are increased, as it measures the average level of national income or their purchasing power. From the economic standpoint, while people have relatively greater purchasing power, their demand for purchasing superior goods and services are increased. As such, they are also more willing to buy superior foreign products rather than inferior/cheaper domestic commodities. On the opposite, when Per capita GDP of a country is decreased, people may prefer cheaper domestic commodities rather than the relatively more expensive foreign substitutes. Therefore, decrease in per capita GDP may trigger an opportunity for declined listed SMEs attempting survival turnaround to employ new production and pricing, as well as market refocusing strategies in order to upsurge sales. Hence, while such companies can reduce the quality, as well as the relative prices for their products to compete domestically, they can additionally focus on the production of their superior and relatively more expensive commodities for export to compete in foreign markets.

5.1.5.2. Results for research question 2

Q2. Compared to SMEs in the manufacturing sector, which turnaround strategy or strategies significantly increase the likelihood of successful turnaround within listed SMEs in service industry, as well as in transportation and communication sector?

In order to control for industry differences, the sample SMEs has been grouped by industry type as guided by the Standard Industry Code (SIC) according to the following scheme:

USSIC1: 01 to 39 → P&M (Production and Manufacturing)

USSIC2: 40 to 48 → T&C (Transportation and Communication)

USSIC3: 49 to 99 → S&T (Service and Trade)

The “USSIC” variable has been defined as a categorical variable, ranging from category 1 to 3, that accounts to control for industry differences in terms of the effect of turnaround strategies on successful survival turnaround. The category USSIC-3 (Service and Trade industry) has been selected as the base (omitted) category, relative to which the estimates of the coefficients of category 1 and 2 has been estimated. Regression results determine that, when a company is in the Production and Manufacturing sector (USSIC1), that company is 1.2388 times ($1/(\exp(\text{USSIC1}) = 1.2388)$) more likely to successfully turnaround during a short period, holding everything else constant, as opposed to the Service and Trade industry (USSIC3). Moreover, the estimated statistics does not reveal a substantial difference, in terms of the ceteris paribus effect of turnaround strategies on successful turnaround, between Transportation and Communication industry (USSIC-2) and Service and Trade sector (USSIC3). However, none of the coefficients relative to any of the three categories of the industry are statistically different from zero, hence we conclude that sector is not a determinant factor in the successful turnaround of a company (As illustrated in table 5). As the result, it is evident that concerning the short-term effect of turnaround strategies on successful survival turnaround, companies in different sectors do not seem to enjoy any advantage due to the industry in which they are active.

5.1.6. Summary of Survival Turnaround

As a conclusive summary in terms of the strategic framework for successful survival turnaround during a short period, results from the analysis of the binomial panel random effects robust logistic model suggest that, declined companies that encountered net loss should increase their OR together with decreasing their CGS, SG&AE, and R&D. Moreover, such firms should also reduce CEO turnover during the short-term implementation of the survival turnaround. While improving shareholder concentration ratio is found to be positively, as well as significantly, related to the probability of successful turnaround in the near term, age of the firms and the industry of firm's performance did not significantly affect turnaround in short run.

The results so far disregard the fact that some companies attempt turnaround at an earlier state during a decline period, prior to facing net loss. This is the focus of this dissertation in the next part.

5.2. Part 2. An Introduction to the Multinomial Model for Survival vs. JIT vs. Smart Turnaround.

Up to this section of the research, the study investigated the application of turnaround strategies pertaining to the survival of declined listed SMEs faced net loss (survival turnaround). Based on the results demonstrated in the table 5, we have identified strategies that listed SMEs should employ to counteract performance declines during a short period while they encounter net loss for a prolonged period. However, there are limitations in this model that have never been examined in the existing corporate turnaround literature. These limitations are the fact that companies do not only implement turnaround strategies when they encounter net loss (negative net income), but sometimes they engage with the procedures to turnaround in a "Smart" way or in a "Just in Time" approach. Therefore, they can avoid facing net losses, as well as further critical financial crises, such as bankruptcy. This is going to be addressed next in this research.

5.2.1. Survival Just in Time (JIT) and Smart Turnarounds Part 1 – Arbitrary

Cutoff point for demonstration

As meticulously explained in the section 4.1.2.1., with respect to declined firms that didn't encounter net loss, the study initially chooses an arbitrary cutoff point from the profit apex to define a new dependent variable that considers both Smart and JIT turnarounds. Subsequently, the multinomial panel random effects logistic regression is estimated.

Data handling is done using SAS software, while estimation of the “multinomial panel, random effects logistic regression” is conducted in Stata using the “GSEM” command¹⁸. As it has been discussed previously in section 5.1.5, due to evidence of heteroskedasticity in the data, the robust model is employed. Moreover, integration of the “survival turnaround” as one of categories in the multinomial dependent variable, while estimating the likelihood of “Smart” and “JIT” turnarounds, is another attempt to ensure the robustness of the model. The estimated results confirm the extent to which regression results related to the Survival turnaround differ while estimating the multinomial panel logistic regression (part 2 of data analysis – section 4.1.2.), as compared to the binomial panel logistic model (part 1 of data analysis – section 4.1.1.). The results presented in this section are not discussed in much detail as they are presented only for demonstration purposes to the reader by utilizing an arbitrary cutoff point. The main idea is that the reader can get acquainted with the interpretation of the multinomial regression results for Smart and JIT turnarounds, as compared to the interpretation of the results relative to the previous model for survival turnaround. Moreover, the purpose of this section, other than the presentation of the multinomial model, is to provide the reader with an introduction to the grid-search procedure that allows us to determine the optimal cutoff value.

Table 6 presents the estimation results for the smart (category 1), JIT (category 2) and Survival (category 3) turnarounds using a cutoff point for Smart vs JIT turnaround of

¹⁸ Stata does not have an embedded command for (non-ordered) Multinomial Panel Logistic RE estimation. We employed a trick whereby we used the GSEM command by specifying the correct error structure in the equations.

40% from the apex. Result are interpreted with respect to the excluded (base) category, namely category 4, which includes companies that did not perform a successful turnaround, as well as firms that did not need a turnaround.

Relative to 40% decline from the profit apex, the significance of the p-values related to the coefficients of the independent variables in the multinomial regression model reveal that, the likelihood of Smart turnarounds (column 1) is significantly affected by decreasing the cost of goods sold, increasing the R&D initiatives as well as improving the shareholder concentration ratio (As illustrated in table 6). However, successful JIT turnaround is significantly affected by increased operating revenue and decreased costs through reduction of their R&D expenditures.

Table 6. Multinomial Regression Results for the 40% Cutoff Threshold from the Apex.

Parameter Estimates			
Effects	Smart Turnaround	JIT Turnaround	Survival Turnaround
CEO Change	-0.0026 0.9974 (0.0797)	0.0469 1.0480 (0.1002)	0.0946** 1.0993 (0.0426)
Operating Revenue (Increase)	0.6366 1.8900 (0.3931)	1.6594*** 5.2556 (0.4241)	1.2209*** 3.3902 (0.3168)
Cost of Goods Sold (Decrease)	0.8269** 2.2863 (0.3428)	-0.0933 0.9108 (0.9491)	0.9180*** 2.5042 (0.3460)
Selling General and Administrative Expenses (Decrease)	-0.2235 0.7997 (0.4251)	0.9928 2.6987 (0.7240)	1.0456 2.8452 (0.6692)
Research and Development Expenses	-0.3587** 0.6985 (0.1470)	-0.8381*** 0.4325 (0.3227)	-0.3031*** 0.7385 (0.0971)
Four-Shareholder Concentration Ratio (CR4)	0.0211* 1.0214 (0.0120)	-0.0072 0.9928 (0.0180)	0.0136 1.0137 (0.0085)
Twenty-Shareholder Concentration Ratio (CR20)	-0.0139** 0.9862 (0.0064)	-0.0046 0.9954 (0.0049)	-0.0032 0.9968 (0.0020)
Global Financial Crisis (GFC)	-1.1075 0.3304 (0.7958)	-0.6355 0.5297 (1.0630)	-1.3167** 0.2680 (0.6047)
GDP per Capita (GDPcap)	0.0722 1.0749 (0.0832)	-0.0744 0.9283 (0.1151)	-0.1748* 0.8396 (0.0903)
Age of the Firm	0.0185** 1.0187 (0.0090)	0.0133 1.0134 (0.0114)	0.0093 1.0094 (0.0068)
USSIC 1	-0.0349 0.9657 (0.5421)	-0.4977 0.6079 (0.6780)	-0.1900 0.8270 (0.2739)
USSIC 2	-14.0972*** 0.0000 (0.9432)	-12.9175*** 0.0000 (1.4550)	-14.0554*** 0.0000 (0.6862)
Constant	-7.7110** (3.6607)	-4.0470* (2.4253)	2.3780 (2.6434)
Log pseudo-likelihood	-349.89707	-349.89707	-349.89707
Observations	2447	2447	2447

Notes: Estimates, their exponentiated values and (robust standard errors) are respectively reported for each category of turnaround. The study employs the exponentiated values relative to the parameter estimates to interpret the regression results. ^U Statistically significant at 10 percent; ^{**}significant at 5 percent; ^{***}significant at 1 percent. Multinomial panel random effects robust logistic regression was estimated with “GSEM” command in Stata.

In terms of Smart turnaround attempts at 40% cutoff point from the profit apex, regression results determine that “*decrease*” in CGS, holding all other variables constant, upsurges the likelihood of successful smart turnaround by **2.2863** time during

a short period, as opposed to the excluded category (the excluded category here contains companies that did not manage to successfully turnaround and those that did not need a turnaround). Moreover, compared to the omitted category, holding all other variables constant, every 1 million US\$ decrease in R&D expenditure, increases the likelihood of successful turnaround by **1.43** ($1/(\exp(R\&D))$) times during a short period. The regression coefficient relative to the four-greatest shareholder concentration ratio (CR4) reveal that, every percentage increase in the shares owned by top-four shareholders, holding all other variables constant, upsurges the likelihood of successful turnaround by **1.021** times during a short period, as opposed to the base category. However, in terms of the ceteris paribus effect of the twenty-greatest shareholder concentration ratio (CR20), results determine that every percentage decrease in the shares owned by twenty-largest shareholders, the likelihood of Smart turnaround will be increased by **1.013** ($1/(\exp(CR20))$) times during a short period, as opposed to the excluded category. Moreover, holding all other variables constant, in contrast with the base category of turnaround, for every additional year increase in the age of the firms, the likelihood of Smart turnaround will be increased by **1.018** times during a short period.

Among all of the turnaround strategies investigated at 40% cutoff threshold from the profit apex, the parameter estimates relative to JIT turnarounds determine that only the operating revenue increase variable, as well as the decrease in the R&D expenditure significantly improves the likelihood of successful turnaround in the near term. As demonstrated in table 6, in contrast with the excluded category of turnaround, the ceteris paribus effect of an “increase” in operating revenue upsurges the likelihood of JIT turnaround by **5.25** times during a short period. Furthermore, the ceteris paribus effect of R&D expenditure reveals that, for every 1 million US\$ decrease in the R&D expenditure, the likelihood of successful JIT turnaround is increased by **1.54** ($1/(\exp(R\&D))$) times during a short period, as compared to the base category. The coefficients related to both of the operating revenue increase, as well as the decrease in the R&D expenditure are highly statistically significant at α -level of 0.01.

As discussed beforehand, including the Survival turnaround as one of the turnaround categories in the multinomial regression model is mainly for the purpose of a) check of the robustness of the multinomial regression model as compared to the binomial (survival) model and b) avoiding loss of information. In terms of the robustness of the regression results, comparing the estimated coefficients related to “Survival turnaround” using the binomial logistic regression model (Table 5, section 5.1.5) versus the multinomial logistic regression output for the same category of turnaround (last column of table 6 -Survival turnaround), it is evident that the parameter estimates do not differ substantially and both regression models produce very similar results. This outcome provides evidence for robustness of the model to different specifications.

The first and most important observation from the results of the multinomial regression is that the determinants of successful turnaround differ depending on the type of turnaround, a result that is overlooked in the literature, which also validates our approach of separating turnaround into Smart, JIT and Survival. We can conclude that companies that perform a Smart turnaround have different strategic options available than firms that delay utilizing turnaround strategies and wait until they reach the JIT zone. Companies that confront a crisis earlier (in the Smart turnaround zone) can counteract their performance decline situation through decreasing the CGS and R&D expenditures. Companies that do not respond to their declining performance state as quickly as Smart turnaround firms do, on the other hand, can reduce the costs through a decrease in the R&D expenditure, as well as focusing on increasing their OR. Finally, companies that attempt a last-minute Survival turnaround can concentrate on reducing the costs through decreasing their CGS and R&D expenditure. These firms should also increase their effort to upsurge their OR, while on the other hand they should reduce the CEO turnover.

As a strategic response mechanism to decline, the results for the 40% cutoff point would suggest that companies employing a smart turnaround (decline from profit apex is up to 40%) should concentrate on reducing the CGS and R&D expenditure. Whereas, companies employing JIT turnaround (decline from profit apex is between

40% to 99%) should focus on increasing their operating revenue, as well as decreasing their research and development spending. However, the limitation is that, there is no definition as to what delineates the Smart vs the JIT turnaround.

Up to this stage of the analysis procedure only the arbitrary 40% cutoff range was examined. However, considering an arbitrary cutoff point is not adequate to warrant a theoretically and/or empirically justified distinction between Smart and JIT turnarounds. It is crucial for declined listed SMEs to know the exact cutoff point, at which employing different turnaround strategies optimally affect the outcome. This is the focus in the next section where the probability of all turnaround attempts is maximized.

5.2.2. Survival vs. JIT vs. Smart Turnaround

Out of all of the 99 possible cutoff points, we define the optimal cutoff threshold, as the one that maximizes the sum of probabilities for a successful turnaround for all companies in the Smart and JIT range. The multinomial regression model is at first estimated for all of the cutoff points from 1 to 99 percent decline (99 iterations) from the apex (in other words, from the profit apex for each company all the way up to the zero net income threshold) and the parameter estimates for each iteration are saved in a vector¹⁹. Using the parameter estimates for each iteration we next save probabilities of successful turnaround for each observation (per iteration, per observation). Since probabilities obtained from the Maximum Likelihood (ML) estimator are consistent (Newey & McFadden 1994 - Theorem 2.5.) and based on Khinchin Theorem (also known as the Wiener–Khintchine theorem in applied mathematics)²⁰, then the average of the estimated values will also be consistent. Likewise, consistent with Slutsky theorem, as an extension of the probability limit (plim) in statistics for sample averages which extends some properties of algebraic operations on convergent

¹⁹ We actually employ only the range 5% - 95% from the apex for the reason that will be explained shortly.

²⁰ The Khinchin Theorem states that the autocorrelation function of a wide-sense-stationary random process has a spectral decomposition given by the power spectrum of that process (Chatfield, 1989; Wiener, 1964; Hannan, 1990; and Ricker, 2003).

sequences of real numbers to sequences of random variables (Goldberger 1964, p. 142-153), if the estimator is consistent then the average of the estimated values is consistent too. The theorem states:

• *probability limit (plim): (Convergence in probability)*

Let θ be a constant, $\varepsilon > 0$, and n be the index of the sequence of RV x_n .

If $\lim_{n \rightarrow \infty} \text{Prob}[|x_n - \theta| > \varepsilon] = 0$ for any $\varepsilon > 0$, we say that x_n converges in probability to θ .

$$x_n \xrightarrow{p} \theta$$

$$\text{plim } x_n = \theta$$

Therefore, if x_n is an estimator, such as the mean of the estimated probabilities in this research, and if $\text{plim } x_n = \theta$, we assume x_n as a consistent estimator of θ .

Therefore, we can take the average of the probabilities for each of the iterations and this average also carries the property of consistency. It is the maximum value of this average over all possible iterations, estimated only for companies in the Smart and JIT range and weighted by net income, that is employed to determine the optimal cutoff point. The steps for determining the optimal cutoff point are as follows:

- **First**, start with considering an arbitrary cutoff point at 5% from the firms' respective profit apex. The reason for employing 5% cutoff point as the initial threshold of decline is due to not having any observations in the dataset for declined sample firms that attempted turnaround prior to 5% and after 95% of their respective profit apex. In other words, if we define the Smart turnaround as being only when companies recognize up to 5% decline in the apex, then there are no observations for Smart turnaround in the data. Similarly, if we define the JIT turnaround as being below 95% from the apex, then there are no observations of companies performing JIT turnaround.
- **Second**, employing the considered 5% initial cutoff point, we create a new dataset by re-constructing the dependent variable. The objective of this step is to classify those companies that managed to perform a Smart turnaround and those companies that accomplished a JIT turnaround as categories 1 and 2

respectively, given the 5% cutoff. Firms that fall in the survival turnaround category are classified as 3, but these do not change with respect to the definition of the cutoff. All remaining cases are classified as 4 in the multinomial dependent variable.

- **Third**, the Multinomial Panel Logit RE model is estimated to acquire the parameter estimates relative to Smart, JIT and Survival turnarounds.
- **Fourth**, the predicted probabilities for successful turnaround attempts are obtained for all observations.
- **Fifth**, the estimated probabilities are further employed to acquire an average probability for successful turnaround using only the companies that had positive net income (Smart and JIT turnarounds). This includes those firms in this range that did not manage to successfully turnaround but had a positive net income.
- **Sixth**, the obtained average probability is stored in a vector classifying it as: $P(\text{Cutoff}=5\%)$
- **Seventh**, all of the mentioned six steps is repeated relative to all cutoff points from 6% to 95% decline from the firms' respective apexes.

In order for the reader to better understand the necessary steps, we illustrate the procedure with the help of the figure below which illustrates the lifecycle of the firm.

As demonstrated on diagram 8, we assume that we have a total of 10 declined companies that are attempting a turnaround prior to facing net loss (The points "A", "B", "C", "D", "E", "F", "G", "H", "I", "J" on the decline cycle denote firms). For the purposes of this illustration we assume that they all have the same profit apex.

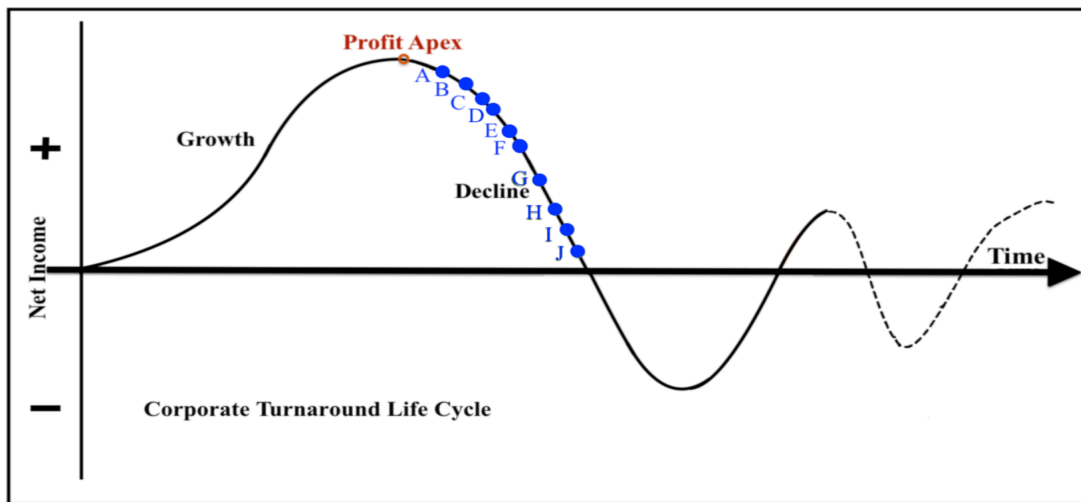


Figure 8. Demonstration of Declined Firms Relative to Corporate Turnaround Life Cycle prior to facing net loss

In order to distinguish between firms that attempted a Smart versus JIT turnarounds, we consider initially the definition of the dependent variable using an arbitrary cutoff threshold of 30%. The diagram would look like as follows (as illustrated in figure 9). (Blue color denotes companies attempting a Smart turnaround, whereas green color denotes firms attempting a JIT turnaround).

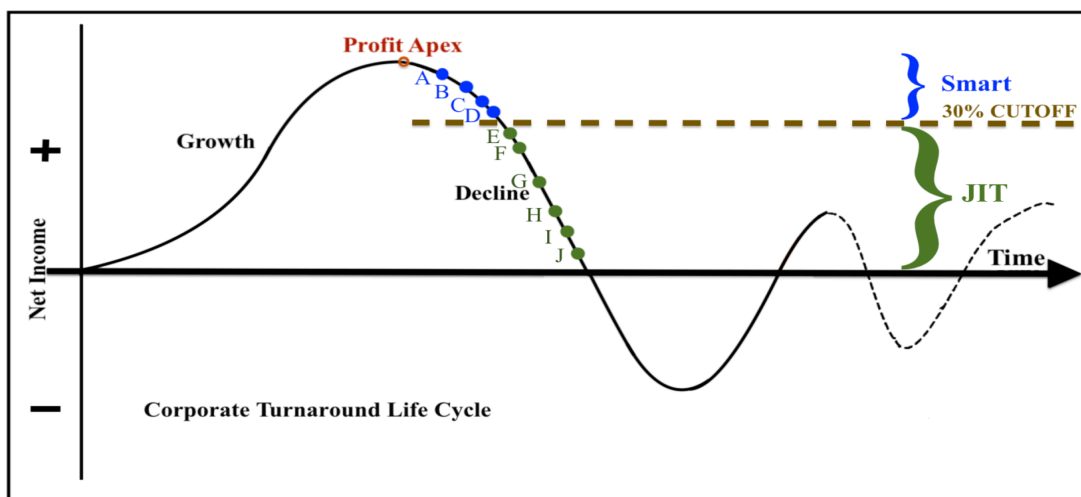


Figure 9. Demonstrating 30% Arbitrary Cutoff Point to Distinguish Smart vs. JIT Turnarounds Pertaining to Corporate Turnaround Life Cycle.

Considering the arbitrary 30% cutoff point, with respect to polychotomus nature of the dependent variable in the multinomial panel logistic model, the declined firms that attempted turnaround are classified as 1 for successful Smart, 2 for Successful JIT, 3 for Survival, and 4 for non-turnaround firms (as illustrated in figure 10). (Survival turnaround firms are not demonstrated on the diagram, as they belong to the negative Net Income zone). The upward sloped arrows denote income time paths of “successful turnarounds” classified as either 1 or 2, whereas the downward sloped arrows denote “unsuccessful turnarounds” classified as 4.

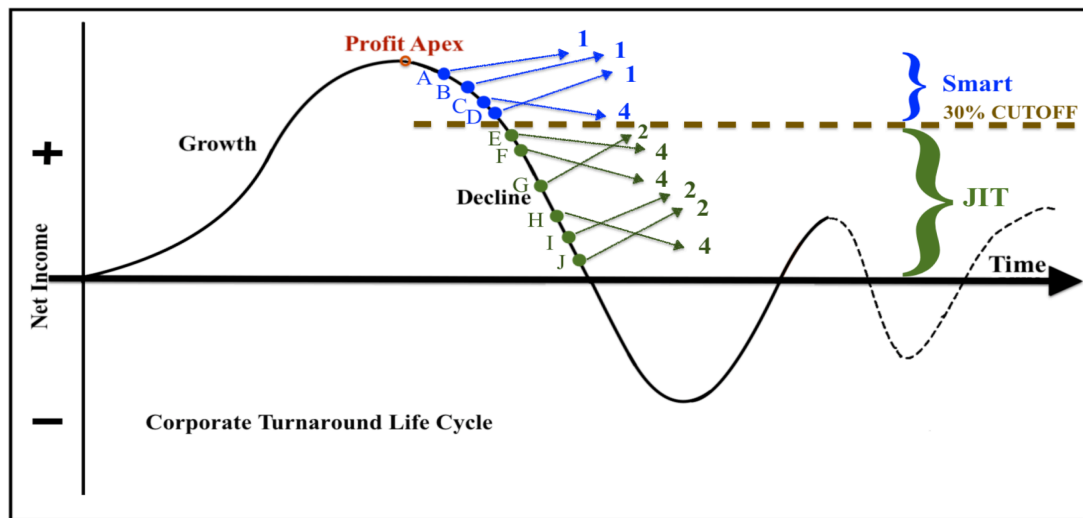


Figure 10. Distinguishing Between Different Turnaround Attempts Relative to the 30% Arbitrary Cutoff Point from the Profit Apex.

As shown in Figure 10, in the Smart region the dependent variable has three companies that are classified as 1, denoting a successful smart turnaround, and one company classified as 4, denoting unsuccessful Smart turnaround. Moreover, the dependent variable has three companies in the JIT region classified as 2 for a successful JIT turnaround, and three companies classified as 4 for unsuccessful turnaround attempts. Given this definition of the dependent variable, the Multinomial Panel Logit RE model is estimated to acquire the parameter estimates relative to Smart, JIT and Survival turnarounds, and the predicted probabilities for successful turnaround attempts are obtained for all observations (as illustrated in figure 11). Let us assume that those probabilities are estimated as 0.56, 0.56, 0.47 and 0.31 for the 4 companies in the Smart

region and 0.77, 0.31, etc. for those 6 companies in the JIT region, as shown in Figure 11.

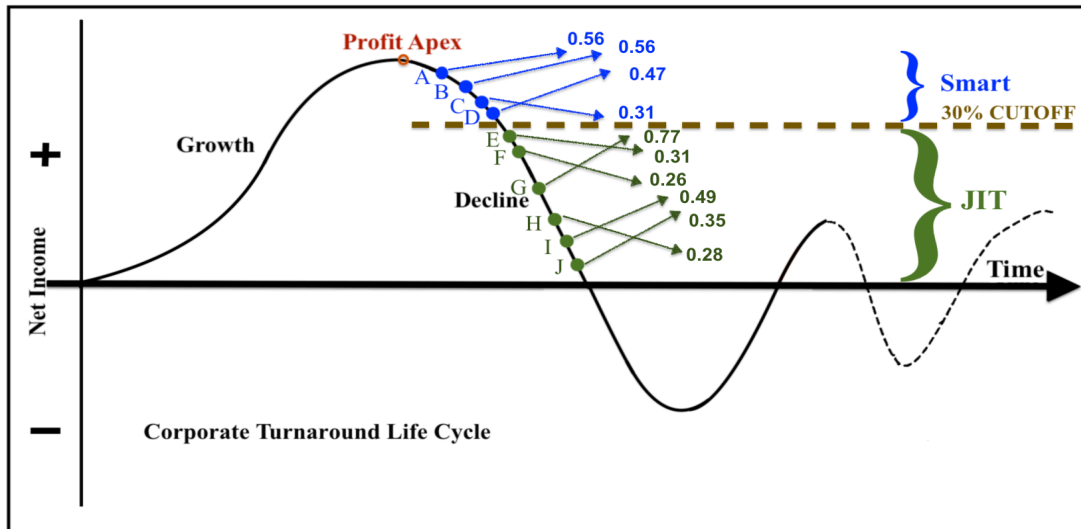


Figure 11. Demonstrating the Predicted Probabilities for Successful Turnaround Attempts Relative to 30% Cutoff Point.

The estimated probabilities are next utilized to acquire an average probability for successful Smart and JIT turnarounds given the 30% cutoff point. The obtained average probability in the example provided with 10 observations are next stored as $P(\text{Cutoff } 30\%) = 0.436$.

Next consider the 60% cutoff point for the same 10 sample firms in the previous example. The Smart and JIT turnaround firms would be separated as follows (as illustrated in figure 12).

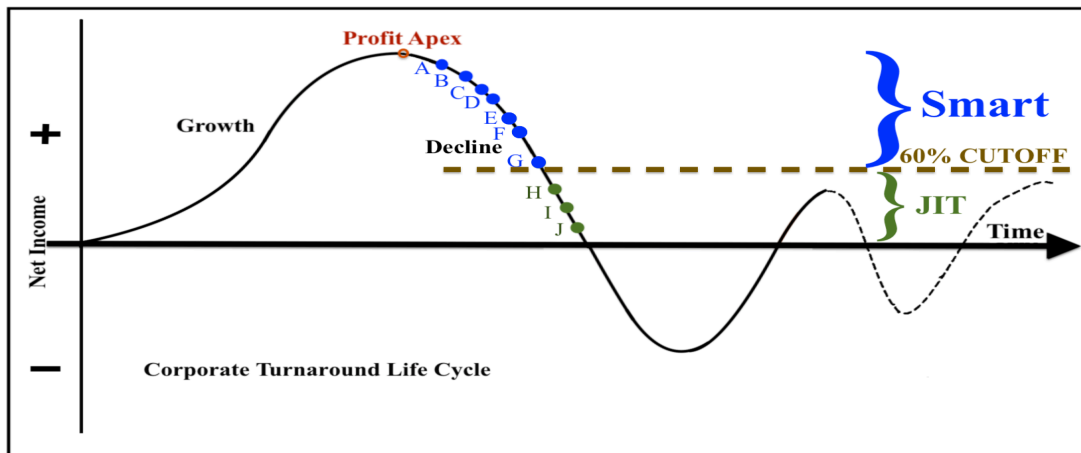


Figure 12. Demonstrating 60% Arbitrary Cutoff Point to Distinguish Smart vs. JIT Turnarounds Pertaining to Corporate Turnaround Life Cycle.

As it is evident, comparing to the 30% cutoff threshold (figure 10), whilst the arbitrary cutoff threshold is increased to 60% decline from the profit apex, the zone pertaining to Smart turnarounds has become larger, whereas the domain for JIT turnaround attempts has decreased. Accordingly, the classification of the firms in the dependent variable with respect to the successful/unsuccessful Smart and JIT turnarounds and relative to the 60% cutoff threshold would be as demonstrated in the figure 13 (Survival turnaround firms, which belong to the negative Net Income zone, are not demonstrated on the diagram).

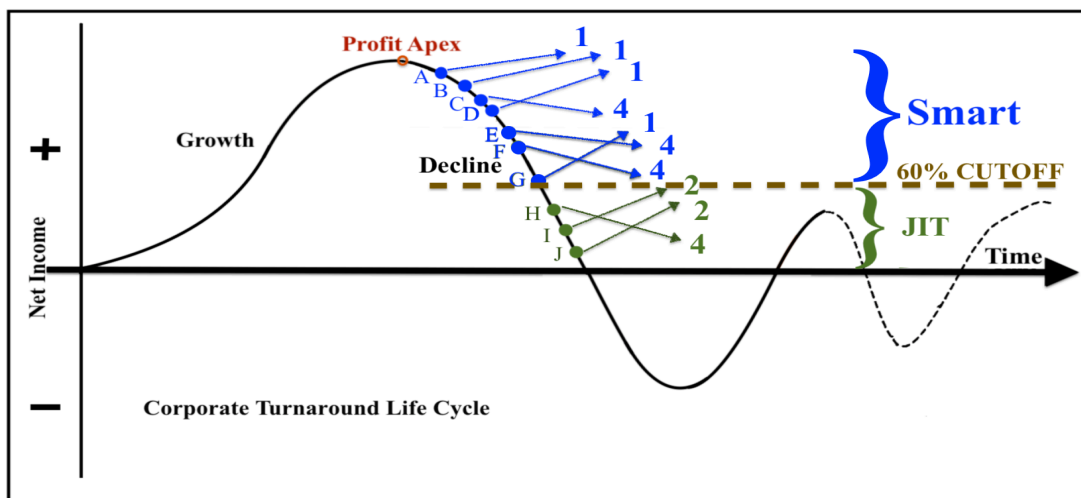


Figure 13. Distinguishing Between Different Turnaround Attempts Relative to the 60% Arbitrary Cutoff Point from the Profit Apex.

Using this new dependent variable, we can now re-estimate the Multinomial Panel Logit RE model and acquire a new set of parameter estimates relative to Smart, JIT and Survival turnarounds, as well as a new set of predicted probabilities for successful turnaround attempts for all observations (as illustrated in figure 14).

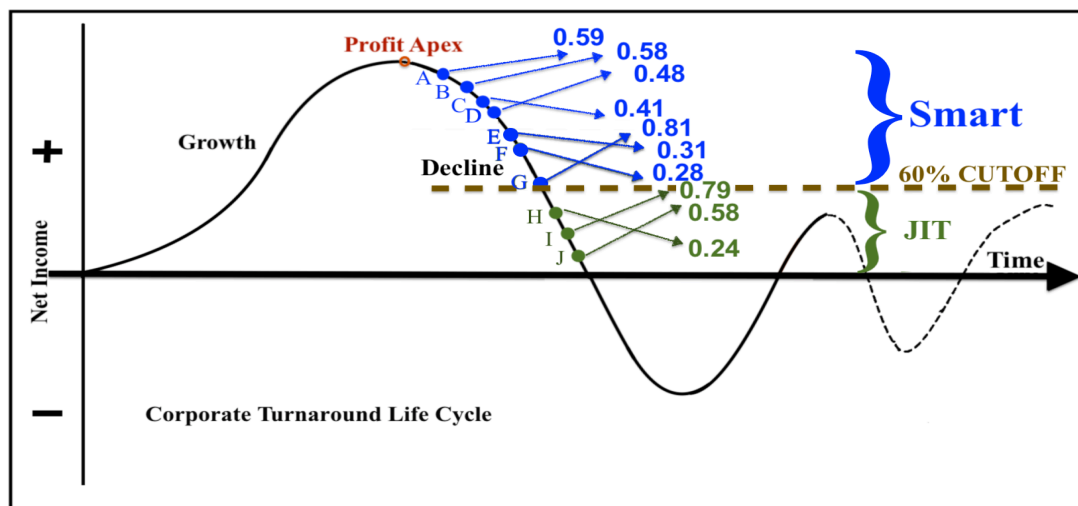


Figure 14. Demonstrating the Predicted Probabilities for Successful Turnaround Attempts Relative to 60% Cutoff Point.

The estimated probabilities are next employed to acquire an average probability for successful Smart and JIT turnarounds collectively for the 60% cutoff point. The obtained average probability will next be stored as $P(\text{Cutoff } 60\%) = 0.507$.

This analysis procedure is conducted with respect to all of the arbitrary cutoff points from 6% to 95% decline from the firms' respective profit apexes. Accordingly, the acquired average probabilities of collective successful Smart and JIT turnarounds are stored with respect to the associated cutoff point. Subsequently, after accomplishing the mentioned steps of the grid-search procedure, the stored weighted averages of the estimated probabilities relative to the joint successful Smart and JIT turnaround attempts are plotted to determine the optimal cutoff point.

The justification for weighting the predicted probabilities by net income to determine the optimal cutoff point is to additionally take into account the extent to which different firms were able to improve on their net income to accomplish a successful turnaround.

With the objective to elucidate the underlying logic for weighting the estimated probabilities by net income, it is worthwhile to elaborate on two points:

First, as previously described in chapter 3.2, with respect to every 4-year rolling time frame of the study from 2000 to 2014, successful turnarounds are defined based on the extent to which declined firms were able to increase their net income in the last two years, as compared to the declined net income they confronted in the first two years. Therefore, Net Income is the underlying foundation based on which we define successful turnarounds.

Second, with the help of the following example we can bring about more clarification on the underlying logic for weighting the estimated probabilities on net income. Let's consider that our market consists of only 2 companies "A" and "B". Let also assume that the company "A" reported a net income of **50,000 US\$** for a specific year, with a **5% estimated probability** for successful turnaround. Accordingly, company "B" reported a net income of **5,000,000 US\$** for that specific year, with the **estimated probability of 55%** for successful turnaround. With respect to the mentioned two companies, considering the simple average of their probabilities, result reveal **30% as the average probability** for successful turnaround.

$$\frac{0.05 + 0.55}{2} = 0.3$$

However, according to Hofer (1980), firms have relatively different growth potentials in terms of profit maximizations. Therefore, the estimated "30% probability of successful turnaround" does not truly represent the (market) potential for companies "A" and "B" to upsurge their net income in order to

successfully turnaround. The reason is that we would logically expect the estimated average probability for the companies “A” and “B” to associate more weight to the company “B”. This is because the company “B” initially had a substantially larger share in the market, and thus reflects a greater “market probability”, for successful turnaround than company “A”. Consequently, when we additionally consider companies’ net income, and accordingly estimate the market predicted probability of successful turnarounds weighted by net income for company “A” and “B”, the results reveal a 54.5% probability of successful turnaround.

$$\frac{(0.05 * 50,000) + (0.55 * 5,000,000)}{(50,000 + 5,000,000)} = 0.545$$

Moreover, within the turnaround management literature there are also different instances for weighting the company indicator variables, by Net Income or Operating Revenues. For instance, weighting the Cost of Goods Sold (CGS) or Selling, General and Administrative Expenses (SG&AE) by Operating Revenue (OR) have also been practiced by Sweet (2004), Chowdhury and Lang (1996a), Arogyaswamy’s (1992), and Hambrick and Schechter (1983) to attain a relative measure of cost changes in their studies.

The results from the grid-search process are presented with the help of figure 15, where the weighted probabilities of collective successful Smart and JIT turnaround attempts are demonstrated with respect to the cutoff thresholds of decline from the firms’ respective profit apexes.

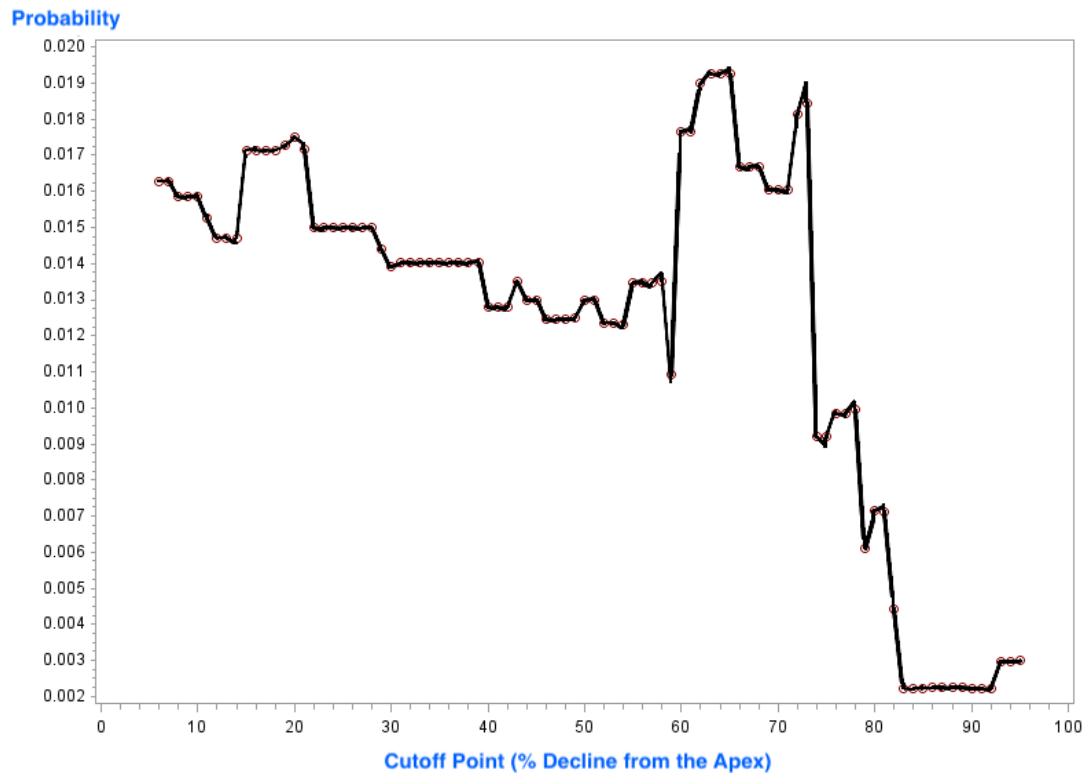


Figure 15. Plotted Probabilities of Joint Successful Smart and JIT Turnarounds Relative to the Percentages of Decline from the Declined Listed SMEs' Respective Profit Apex.

Note: The low value for the average probabilities (see vertical axis) are due to the fact that both companies that were successful in turnaround and those that were unsuccessful are included in the estimation. The companies that did not manage to turnaround had a very low predicted probability for a successful turnaround (near zero) and also dominate the data.

Figure 15 suggests that the probability for successful turnaround attempts is maximized at 63 to 65 percent from the apex. These points are the discovered optimal cutoff points at which employing turnaround strategies maximizes the (market) probability of success for all turnaround attempts.

Consequently, the parameter estimates from the analysis of the multinomial panel random effects logistic regression at the discovered optimal cutoff point (either 63%, 64% or 65% decline from the listed SMEs' respective profit apexes)²¹ reveal the framework of turnaround strategies to maximize the probability of success for Smart

²¹ The reason that the 63%, 64% and 65% cutoff points demonstrate identical probabilities is that within this range the sample of companies in each category did not change. This is the reason that we observe so many horizontal lines in the figure 15.

and JIT turnaround attempts collectively. The results from the analysis of the multinomial panel random effects logistic regression given the 64% optimal cutoff²² are further discussed for Smart and JIT turnarounds next (As illustrated in table 7).

²² The discovered 64% optimal cutoff threshold is both dynamic (the optimal cutoff changes in time) as well as sample specific (we do not expect the same percentage to hold for companies in the countries other than the North America region).

Table 7. Multinomial Regression Results for the 64% Cutoff Threshold from the Apex.

Parameter Estimates			
Effects	Smart Turnaround	JIT Turnaround	Survival Turnaround
CEO Change	-12.0991*** 0.0000 (0.3731)	0.1460** 1.1572 (0.0744)	0.1004** 1.1056 (0.0420)
Operating Revenue (Increase)	0.7248** 2.0643 (0.3450)	2.6696*** 14.4342 (0.7922)	1.2164*** 3.3750 (0.2647)
Cost of Goods Sold (Decrease)	0.3505 1.4198 (0.6959)	0.6191 1.8573 (0.4103)	0.9246*** 2.5209 (0.2876)
Selling General and Administrative Expenses (Decrease)	-0.6406 0.5270 (0.5670)	0.8238 2.2791 (0.5296)	1.0734*** 2.9253 (0.3421)
Research and Development Expenses	-1.0170*** 0.3617 (0.1772)	-0.6114** 0.5426 (0.2856)	-0.3078*** 0.7351 (0.0827)
Shareholder Concentration Ratio (4)	0.0325** 1.0330 (0.0133)	-0.0112 0.9889 (0.0176)	0.0131* 1.0132 (0.0071)
Shareholder Concentration Ratio (20)	-0.0202** 0.9800 (0.0085)	-0.0067 0.9933 (0.0059)	-0.0031** 0.9969 (0.0015)
Global Financial Crisis (GFC)	-16.1941*** 0.0000 (0.3883)	-16.9960*** 0.0000 (0.2371)	-1.3411** 0.2616 (0.5708)
GDP per Capita (GDPcap)	0.3021*** 1.3527 (0.0944)	-0.1003 0.9046 (0.0779)	-0.1791*** 0.8360 (0.0514)
Age of the Firm	0.0255*** 1.0258 (0.0083)	0.0174 1.0176 (0.0178)	0.0091 1.0091 (0.0067)
USSIC 1	-0.2574 0.7731 (0.6855)	-0.0841 0.9193 (0.6229)	-0.1990 0.8195 (0.2582)
USSIC 2	-16.9439*** 0.0000 (1.1379)	-15.6981*** 0.0000 (1.0048)	-17.2799*** 0.0000 (0.6757)
Constant	-17.2144*** (4.5853)	-2.4420 (3.5197)	2.4755 (2.0242)
Log pseudolikelihood	-359.67735	-359.67735	-359.67735
Observations	2447	2447	2447

Notes: Estimates, their exponentiated values and (robust standard errors) are respectively reported for each category of turnaround. The study employs the exponentiated values relative to the parameter estimates to interpret the regression results. *Statistically significant at 10 percent; **significant at 5 percent; ***significant at 1 percent. Multinomial panel random effects robust logistic regression was estimated with “GSEM” command in Stata.

Later in this chapter, the regression results are further interpreted in detail with respect to the study’s research questions. In this paragraph, a concise summary of the estimated statistics is provided relative to the main variables of the study only. Results from the

analysis of the multinomial panel random effects robust logistic regression model at the optimal cutoff point of 64% determine that,

- listed SMEs that successfully performed a Smart or JIT turnaround, significantly increased the operating revenue (OR) during a short period, as opposed to non-turnaround firms.
- On the other hand, increased R&D expenditure negatively affected performance in both Smart and JIT turnarounds.
- Decreasing the cost of goods sold (CGS), as well as selling, general and administrative expenses (SG&AE) does not significantly affects either of successful Smart or JIT turnarounds. CGS together with SG&AE are however effective in the case of Survival turnaround attempts.
- In terms of the CEO_Change²³ variable, the coefficients relative to this variable demonstrate a negative correlation with successful Smart turnarounds, as compared to its positive correlation with successful JIT and Survival turnarounds (as illustrated in table 7). It is worth mentioning that in the binomial regression model this variable also demonstrated a positive sign relative to the Survival turnarounds (table 5 in section 5.1.3.). This finding suggests that in Survival and JIT turnarounds additional years of experience for the CEO in the same company are more likely to result in a successful turnaround attempt. In Smart turnarounds however, additional years of experience for the CEOs in the same firm do not help declined listed SMEs to successfully turnaround. This finding is contrary to the JIT turnaround firms' practice, as they have significantly reduced CEO turnover. This conclusion will be further discussed in the sections that follow.
- Furthermore, in contrast with non-turnaround companies, the significance of the shareholder concentration ratio variables (CR4 and CR20) suggest that, improvement on shareholder concentration ratio significantly increases the likelihood of successful Smart turnarounds. The shareholder concentration

²³ Let's remind the reader that the "CEO_Change" variable demonstrates the number of years that the CEO provides additional management service to the same company.

ratio variables do not show a significant effect on the performance of JIT turnaround companies.

In summary the results suggest that:

A. Vertical Comparison (by Type of turnaround)

1. Smart turnaround, which is considered for declined listed SMEs attempting turnaround prior to 64% decline from the apex – the most successful strategies are change of the CEO, increasing the OR, and reducing the R&D.
2. JIT turnaround, which is considered for declined listed SMEs attempting turnaround past 64% decline from the apex prior to encountering net loss – the most successful strategies are reducing CEO turnover, increasing the OR, and decreasing the R&D.
3. Survival turnaround, which is considered for declined listed SMEs attempting turnaround past 0-Net Income decline threshold (facing net loss) – the most successful strategies are reducing CEO turnover, increasing the OR, as well as decreasing the CGS, SG&AE and R&D.

B. Horizontal Comparison (by strategy):

1. R&D decrease is most effective for a Smart turnaround.
2. OR increase is most effective for a JIT turnaround.
3. CGS decrease and SG&AE decrease are most effective during a Survival turnaround.
4. CEO change is more effective during Smart. CEO experience is more effective in JIT.

The regression results relative to the research hypotheses are further discussed in detail in terms of the statistically significant variables only.

5.2.2.1. Results for research question 3

Q3. Compared to listed SMEs that encountered net loss, which turnaround strategy or strategies increase the likelihood of successful turnaround to a great extent within listed SMEs conducting “Smart Turnaround” or “Just-In-Time” (JIT) turnarounds during a short period?

CEO change:

As discussed earlier in section 5.1.5., various studies have reported that majority of large firms, that achieved successful turnaround, appointed a new CEO (Schendel, Patton & Riggs 1976; Bibeault 1982; Thain & Goldthorpe 1989; and Grinyer & McKiernan 1990). Therefore, consistent with the existing evidences in the literature, this study hypothesized that the change of the CEO or top management significantly affects successful Smart and JIT turnarounds, during a short period, in declined listed SMEs, prior to the point firms face net loss.

The parameter estimates relative to this variable suggest that CEO experience does not substantially help declined firms to achieve successful Smart turnarounds. Moreover, in contrast with the omitted category, in terms of JIT turnaround firms, parameter estimates from the analysis of the regression model determine that for every additional year that the CEO or top management provides management service to the same firm, there is **1.16 times** more likelihood of successful turnaround during a short period, holding all other variables constant. This variable is statistically significant for both Smart and JIT turnaround and we reject the null hypothesis at α -level of 1% and 5% respectively (table 7).

As it is evident from the analysis of the coefficients, and compared to an early Smart turnaround, as performance decline increases, that is as we are moving further down the zone towards a JIT turnaround attempt, CEO experience (retaining the CEO) becomes more effective. This finding corresponds with fact that in Smart turnarounds the extent of decline is not critical, as compared to JIT and Survival turnaround situations. As the result even if the CEO is changed, it does not harm the organization.

But in JIT and Survival turnarounds, since the extent of decline in performance is relatively great, retainment of CEO (CEO experience within the same firm) significantly increases the likelihood of successful turnarounds. This finding highlights the critical role of the top management expertise, as well as affiliation with the firm in making the right decision in a timely manner while counteracting a performance decline during a short period. Therefore, as suggested by the regression results, for a successful turnaround attempt during a short period, as the extent of decline in performance increases, change of the CEO in listed SMEs should not be practiced.

Operating Revenue (OR) Increase:

In terms of the operating revenue variable the study hypothesizes that similar to large successful turnaround firms (Hofer 1980; Hambrick & Schechter 1983; Barker & Duhainie 1997; and Balgobin & Pandit 2001), operating revenue increase may significantly affect successful Smart and JIT turnarounds in declined listed SMEs, during a short period. The results from the analysis of the regression model demonstrate that, as compared to the excluded category, the ceteris paribus effect of ***increasing*** the operating revenue significantly upsurges the likelihood of successful turnaround in declined listed SMEs by **2.06** and **14.43** times for Smart and JIT turnarounds respectively, during a short period. The sign of this variable is consistent with our expectation and it is statistically significant for both Smart and JIT turnarounds at α -level of 5% for Smart, and 1% percent for JIT respectively (table 7).

Comparing the Smart with JIT turnarounds, the estimated statistics relative to the OR_Increase variable suggest that the effect of increasing the operating revenue on firm's performance is approximately seven times greater in JIT turnarounds. This finding can be deliberated from the resource dependency perspective. SMEs do not have vast resources and leverage (Boyle & Desai 1991; and Chowdhury & Lang 1993). As compared to Smart turnarounds, JIT turnarounds are attempted at relatively greater percentages of decline from the firms' respective profit apexes (discovered in this research to be more than 64% of decline from the profit apex). Thus, declined listed SMEs conducting JIT turnarounds are relatively scarcer on available resources than

Smart turnaround companies are. Consequently, in JIT turnaround attempts, declined listed SMEs required greater efforts in terms of increasing their operating revenue to compensate for the extent of decline, as compared to Smart turnaround listed SMEs.

Cost of Goods Sold (CGS) Decrease and Selling, General and Administrative Expenses (SG&AE) Decrease:

As an organizations' cost, it was expected that declined listed SMEs may reduce the Costs of Goods Sold (CGS), as well as the Selling, General and Administrative Expenses (SG&AE) with the objective to upsurge the availability of resources whilst performing a Smart and JIT turnarounds. Therefore, in terms of the CGS as well as the SG&AE variables, the study hypothesized that the ceteris paribus reduction in these costs and expenses can significantly affect successful turnaround in listed SMEs during Smart and JIT turnarounds (Chowdhury & Lang 1996a; and Sweet 2004). However, as demonstrated in table 7, results suggest that listed SMEs achieving successful turnaround do not significantly reduce these costs while performing Smart and JIT turnaround attempts for short run. This finding is in contrast with the fact that successful Survival turnaround firms significantly decrease their CGS as well as SG&AE during a short-term turnaround process (as illustrated in table 7).

This finding can be justified in terms of the extent of firms' performance decline, as well as their relative need for the required resources to implement turnaround strategies and continue business operations. As declared by Sweet (2004), Arogyaswamy, Barker and Yasai (1995), and Pearce and Robbins (1993), the main objective of reducing the costs and expenses in a turnaround situation is to provide enough resources for declined businesses with the objective to reinstate profitability. Reducing the costs and expenses require a declined company to alter its current business operations process and to decrease the size and scope of a business through strategic actions, such as product-market refocusing concerning the retrenchment, discontinuation of lossmaking product lines, deleting lines of business that are not related to the core, as well as ceasing unpromising products (Barker & Duhaime 1997; Sudarsanam & Lai 2001; Pearce & Robbins 2008; and Boyne & Meier 2009). While changing a firm's

business operations procedure may also decrease firm's competence in short run, it is reasonable that declined firms consider their relative extent of decline prior to conducting retrenchment initiatives. Accordingly, as compared to Survival turnaround firms, in the case of Smart and JIT turnarounds, the extent of decline is not relatively great, and firms are still profitable. Therefore, declined listed SMEs that attempt a Smart and JIT turnaround during a short period do not require retrenching through significant reduction in their CGS and SG&AE. However, in the case of Survival turnaround listed SMEs, the extent of crisis situation is substantially high, since they have been encountering net loss for at least two years. Thus, for declined listed SMEs attempting a survival turnaround the scarcity of resources due to their crisis situation justifies retrenching through significant decrease in their CGS, as well as SG&AE.

Research and Development Variable (R&D):

Research and Development (R&D) is an operating expenditure on the income statement. Since SMEs are relatively scarce on resources (D'Aveni 1989; Castrogiovanni & Bruton 1992 Chowdhury & Lang 1996; Daniel et al. 2004), it is expected that during a crisis situation, increased R&D expenses, which are not expected to benefit the company in the short run (Hofer 1980), negatively affect the likelihood for a successful turnaround during a short period. Therefore, it was expected that, similar to large successful turnaround companies (Bibeault 1982; Hambrick & Schecter 1983; Robbins & Pearce 1992; Barker & Mone 1994; Balcaen & Ooghe 2004; and Morrow, Johnson & Busenitz 2004), declined listed SMEs performing either Smart, JIT or Survival turnarounds during a short period must have significantly decreased their R&D expenditure.

Results reveal that increasing the R&D expenditure negatively affects the likelihood of successful Smart and JIT turnarounds during a short period (table 7). In other words, holding all other variables constant, for every 1 million US\$ decrease in R&D expenditure, the likelihood of successful Smart and JIT turnarounds is **2.76** and **1.74** times higher respectively ($1/(\exp(R\&D))$) during a short period, as compared to the excluded category. The p-values relative to the coefficients of this variable are

statistically significant for both Smart and JIT turnarounds and we reject the null hypothesis at α -level of **0.01** and **0.05** respectively. Employing this strategy is consistent with our expectation of the sign of this variable as R&D is recorded as a type of cost on the income statement (Hall 2012). These results are similar to the case Survival turnaround firms, where it is evident that holding all other variables constant, every 1 million US\$ decrease in R&D expenditure upsurges the likelihood of successful turnaround by **1.36** times ($1/(\exp(R\&D))$) during a short period, as compared to the excluded category (table 7). This variable is highly statistically significant at α -level of **0.01**.

R&D expenditure is the annual amount of money that a firm spends by means of planned research to acquire new knowledge with the objective to develop new products or services. For declined listed SMEs, having limited resources, the availability of resources plays a critical role in the success of turnaround attempts. So, when the extent of performance declines is increased, the availability of the required resources to restore the profitability becomes more important.

As it is evident from the findings of this research, all declined listed SMEs performing either Smart, JIT or Survival turnarounds significantly reduced R&D expenditure (As illustrated in table 7). However, as the extent of decline in performance is increased, the positive effect of reducing the R&D expenditure on successful turnaround attempts decreases. In other words, the *ceteris paribus* effect of decreasing the R&D expenditure is most effective during Smart turnarounds, as compared to JIT and Survival turnaround attempts. Therefore, as the extent of performance decline increases, holding all other variables constant, decreasing the R&D expenditure becomes less effective in increasing the likelihood of successful JIT and Survival turnaround attempts. This is mainly due to the fact that, as compared to listed SMEs that encountered net loss (Survival turnaround), in Smart and JIT turnaround firms, the extent of performance decline is much lower. Hence, Smart and JIT turnaround firms are not relatively involved with crisis, as survival turnaround listed SMEs are. Therefore, in terms of cost reduction initiatives, in order for declined listed SMEs to

provide more resources for the company while performing Smart or JIT turnarounds in short period, reducing the R&D expenditure alone seems sufficient (As illustrated in table 7). Consequently, from a retrenchment initiatives standpoint, this finding highlights the importance of considering the extent of firms' performance decline situation while establishing appropriate turnaround strategies framework.

Shareholder Concentration Ratio Variables (CR4 and CR20):

From the analysis of the regression model it is evident that the four-shareholder concentration ratio (CR4), which is the total shares owned by the four greatest shareholders in each of the listed SMEs of the sample from 2000 to 2014, demonstrates positive correlation with the likelihood of successful Smart turnaround. This means that higher four-shareholder concentration ratio increases the likelihood of a successful Smart turnaround. Though, the effect is marginally small as the exponentiated coefficient suggests that, holding all other variables constant, every percentage point increase in the CR4 upsurges the likelihood of Smart turnaround by **1.033** ($\exp(\text{CR4})$) times during a short period, as compared to the base category of the dependent variable. The p-value of this variable is statistically significant at α -level of 0.10. Conversely, in terms of the twenty-shareholder concentration ratio (CR20), which is the total shares owned by the twenty greatest shareholders in each of the listed SMEs of the sample, regression results reveal a negative correlation between the CR20 and the likelihood of successful Smart turnarounds during a short period. As demonstrated in table 7, in contrast with the excluded category, holding all other variables constant, for every percentage decrease in the shares owned by the twenty greatest shareholder concentration ratio, it is **1.002** ($1/(\exp(\text{CR20}))$) times more likely that a declined listed SME accomplishes a successful smart turnaround during a short period. The p-value is statistically significant, and we reject the null hypothesis at α -level of 0.10. As the result, consistent with Survival turnarounds, improving the ownership concentration results in greater likelihood of successful Smart turnaround in listed SMEs within a short time span. This finding is consistent with Dalin (2014); and Gutierrez and Ttibo (2004), as they found positive significant correlation between shareholder concentration and firms' performance in large organizations. However, neither of the

four-shareholder or twenty-shareholder concentration ratios seem to significantly affect the likelihood of JIT turnarounds.

Global Financial Crisis (GFC):

This control variable is a dummy variable equal to 1 for the year of the global financial crisis (2009); otherwise it is zero. As demonstrated in table 7, regression results reveal a negative effect of the global financial crisis on short-term successful Smart and JIT turnarounds in listed SMEs. While the size of the coefficients indicates the magnitude of the effect that GFC had on listed SMEs attempted a turnaround, it apparently suggests that holding all other variables constant, during the GFC accomplishing successful smart and JIT turnarounds were improbable. This variable is statistically significant at α -level of 0.01 for both Smart and JIT turnarounds.

GDP Per Capita:

Results from the analysis of the regression model reveal that, comparing to the excluded category, in terms of listed SMEs that managed to successfully attempt a Smart turnaround during a short period, for every 1,000 US\$ increase in the Per Capita GDP, the likelihood of successful turnaround is increased by **1.35** ($\exp(\text{GDPcap})$) times (table 7). This variable is highly statistically significant at α -level of 0.01. Moreover, the parameter estimates relative to the Per capita GDP variable do not demonstrate a significant effect of this variable on JIT turnaround attempts.

Comparing the results of the multinomial panel regression model (table 7) with the binomial panel logistic regression results (table 5), it is evident that the effect of per capita GDP variable on firm's performance during a turnaround situation differs between Smart and Survival turnarounds. The parameter estimates reveal that during Smart turnarounds "increase" in the Per capita GDP upsurges the likelihood of successful turnaround in declined listed SMEs. This finding suggests that during a Smart turnaround situation increase in the per capita GDP can provide an opportunity for declined listed SMEs attempting a Smart turnaround to upsurge sales without the need for substantial changes in their production and pricing strategies. However, this

finding is contrary to Survival turnarounds, where “decrease” in per capita GDP increases the likelihood of success for Survival turnarounds. Although the findings for the per capita GDP variable seem contradictory relative to Smart versus Survival turnarounds, it can be justified in terms of considering the impact of global economy on business, as according to Lall, Weiss and Zhang (2005) it creates opportunities for companies to engage with international trade in order to increase profit.

Per capita GDP is a measure of how good the economy is doing (Henderson, Storeygard & Weil 2012). So, “decrease” in per capita GDP would mean that the economy is not doing well and thus there are less opportunities available for SMEs to grow in the local market (ibid). It suggests that SMEs requiring survival turnaround, with less opportunities available in domestic economy, should also seek opportunities in other economies if they have to turnaround. Decrease in per capita GDP forces declined businesses to become export oriented (Lawless 2009), thus opens a declined listed SME to new market opportunities. For these businesses, exporting would be entering an economy that is doing better and where there would be “increase” in per capita GDP (Corden 1984, and Lawless 2009). This explains why “decrease” in per capita GDP in domestic market (actually represents “increase” in per capita GDP in export markets) increases the likelihood of success for Survival turnarounds. During Survival turnarounds, as firms face net loss for an extended period, companies require substantial changes with respect to their production and pricing strategies in order to upsurge sale and cope with their performance decline situation (Hofer, 1980; and Kamel 2005). Therefore, when per capita GDP decreases, through employment of new production and pricing strategies, declined listed SMEs attempting a Survival turnaround can focus on the production of their relatively cheaper commodities for domestic market, while at the same time they increase sales by exporting their relatively superior, and thus more expensive, products to export markets. Consequently, the contradictory findings are apparently not inconsistent, as in both cases of Smart and Survival turnarounds increased likelihood of successful turnaround

is related to per capita GDP “increase” (in Smart turnarounds for domestic economy and in Survival turnarounds for export economy).

5.2.2.2. USSIC variables

Compared to SMEs in manufacturing sector, which turnaround strategy or strategies significantly increase the likelihood of successful Smart and JIT turnarounds within listed SMEs in service industry, as well as in transportation and communication sector?

In order to control for industry differences, the sample SMEs has been grouped by industry type as guided by the Standard Industry Code (SIC) according to the following scheme:

USSIC1: 01 to 39 → P&M (Production and Manufacturing)

USSIC2: 40 to 48 → T&C (Transportation and Communication)

USSIC3: 49 to 99 → S&T (Service and Trade)

The “USSIC” variable has been defined as a categorical variable, ranging from category 1 to 3, that accounts to control for industry differences in terms of the effect of turnaround strategies on successful turnarounds. The category USSIC-3 (Service and Trade industry) has been selected as the base category, relative to which the estimates of the coefficients of category 1 and 2 has been estimated. In contrast with the excluded category of the multinomial dependent variable, in both Smart and JIT turnaround listed SMEs, the estimated statistics does not reveal a substantial difference in terms of the ceteris paribus effect of turnaround strategies on successful turnaround, between “Transportation and Communication industry” (USSIC-2) and “Service and Trade sector” (USSIC3). As compared to the USSIC3 variable, although the estimated coefficients for the USSIC2 variable is statistically significant, but the effect of industry on successful turnaround attempts in Transportation and Communication sector is minimally small, as its exponentiated value are infinitesimal for both Smart and JIT turnarounds. Moreover, the coefficients relative to the Production and Manufacturing sector (USSIC1) are not statistically different from zero for all

turnaround attempts. Hence, comparing to Service and Trade industry, we can conclude that companies in Production and Manufacturing sector do not seem to enjoy any advantage due to the industry in which they are active.

5.3. Summary of the Results

As a conclusive summary, through employment of a grid-search procedure, it is determined that the optimal cutoff point for declined listed SMEs to conduct turnarounds is 63% to 65%²⁴ from the profit apex. The discovered optimal cutoff point is the threshold at which employing turnaround strategies maximize the probability of success for Smart and JIT turnaround attempts in listed SMEs before they encounter net loss.

Utilizing the discovered 64% optimal cutoff point, results from the analysis of the multinomial panel random effects robust logistic model determined the optimal strategic framework pertaining to successful implementation of Smart and JIT turnarounds in listed SMEs. According to the estimated statistics, as the strategic framework for Smart turnarounds in listed SMEs during a short period, firms should significantly increase the OR together with decreasing their R&D. Unlike firms attempting a turnaround at JIT or Survival situation, it is also evident that successful Smart turnaround firms could engage with a change of the CEO. This is because results suggest that CEO experience does not substantially help declined firms to achieve successful Smart turnarounds. This finding is contrary to the JIT and Survival turnaround situations, in which CEO experience significantly affects a successful turnaround. Additionally, it has also been determined that, improving the shareholder concentration ratios significantly increases the likelihood of Smart turnarounds.

On the other hand, in terms of the optimal framework of short-term turnaround strategies for JIT turnaround attempts, declined listed SMEs should significantly

²⁴ As previously declared, the discovered 63% - 65% optimal cutoff threshold is both dynamic (the optimal cutoff changes in time) as well as sample specific (we do not expect the same percentage to hold for companies in the countries other than the North America region).

increase their operating revenue while reducing their expenditure through decreased R&D spending. Moreover, change of the CEO is not advised when firms attempting JIT turnarounds. This is because of the association between the extent of firm's decline and the critical role of the experience, as well as familiarity with the company's core business procedures and resources that the CEO acquired in the same company.

In terms of comparing between different turnaround strategies in declined listed SMEs, pertaining to different extents of decline from the profit apex, results reveal that reducing the R&D expenditure is the most effective strategy for Smart turnaround attempts. It is however increasing the operating revenue that affects most the JIT turnarounds. Furthermore, CGS decrease, as well as reducing the SG&AE are the most promising strategies to increase the likelihood of success during Survival turnaround attempts. Accordingly, in terms of the CEO_change variable, results suggest that, while change of the CEO is more effective during a Smart turnaround, in successful JIT and Survival turnarounds it is the CEO experience (retainment) that matters.

Chapter 6

6. Conclusions

6.1. Contributions

6.1.1. Empirical Contribution

In this research we investigated the short-term effect of the three most commonly reported turnaround strategies (CEO change, retrenchment and recovery response) pertaining to large enterprises, on the survival of public listed SMEs, while firms encounter net loss (Survival turnaround).

With respect to the firms that faced net loss for an extended period, this dissertation established a framework of short-term turnaround strategies for the survival of public listed SMEs. As the conclusive discovery regarding the framework of short-term turnaround strategies for declined listed SMEs facing net loss (Survival turnaround), results suggest that, as the retrenchment initiatives, firms should reduce their costs and expenses through significant reduction in their CGS, SG&AE as well as their R&D expenditure. This discovery addresses an important gap in the corporate turnaround management literature with regards to “how declined listed SMEs should perform retrenchment (reduce the costs)”. Schendel, Patton & Riggs (1976), Hambrick & Schechter (1983), and Pearce and Robbins (1992) had discovered that retrenchment (reducing the costs) is the prerequisite for successful turnaround; however, they did not elaborate on how to reduce the costs. Therefore, this discovery addresses this gap in the existing turnaround management literature. Besides, at the same time as declined firms are reducing their costs and expenses during a Survival turnaround attempt, they should significantly upsurge sales. Furthermore, whilst results reveal that improving the shareholder concentration ratio can significantly increase the likelihood of successful turnaround relative to firms that faced net loss, change of the CEO should not be practiced during survival turnaround attempts, as it significantly decreases the likelihood of successful turnaround.

6.1.1.1. Contribution to Discussion

The statistically significant CEO-change variable relative to all categories of turnaround (Survival, JIT and Smart) determines the critical role of the management in the success of all turnaround attempts. This finding verifies Chowdhury and Lang's (1996a) conclusion that acknowledged lack of management ability as a critical source of performance declines in small industrial companies, as well as Thain and Goldthorpe (1989), Grinyer and McKiernan (1990), Barker, Patterson, and Mueller's (2001) findings in terms of the critical role of the management in the success of turnaround attempts in large companies. Nonetheless, in terms of the CEO_change variable, whilst change of the CEO is more effective during Smart turnarounds, CEO experience appears to be more effective in JIT turnaround attempts.

6.1.2. Contribution to Theory

In addition to the empirical contribution of this dissertation, the study further contributed to theory by investigating whether corporate turnaround has a relatively higher level of success if it was attempted earlier in the firm's life cycle, prior to the point that firms face net loss (Smart and JIT turnarounds).

Through employing the Corporate Turnaround Lifecycle Model (Kamel 2005), this research developed a strategic framework of turnaround strategies pertaining to declined listed SMEs, prior to the point firms face net loss. Accordingly, it is discovered that the optimal cutoff point for employing turnaround strategies is either at 63%, 64% or 65% decline from the firms' respective profit apexes. The determined optimal cutoff point is the percentage of decline from the profit apex at which employing turnaround strategies maximize the probability of success for all turnaround attempts collectively during a short period, before declined listed SMEs encounter net loss. Pennings and Goodman (1977) had declared that part of the challenge in establishing criteria to investigate turnaround attempts is that there is no universal threshold level. Therefore, the discovered optimal percentage of decline in this research addresses the mentioned gap in the turnaround management literature. On the other hand, Chowdhury and Lang (1996b) had claimed that a firm faces a turnaround

situation only when the average Return on Investment (ROI) declines below a pre-tax 10 percent cut-off value for 2 consecutive years. Thus, the determined percentage of the optimal cutoff point in this research further extends the applicability of turnarounds. As the contribution from this finding, given the established generic five-stage turnaround model by Balgobin and Pandit (2001) (as illustrated in figure 1, section 2.2.1.), the “triggers for change” stage can be either of 63, 64, or 65 percentages from profit apex. At the discovered optimal cutoff point, employing turnaround strategies maximize the probability of success for all types of turnaround collectively.

Figure 16 illustrates the determined optimal turnaround strategies framework at the discovered 64% percent decline from the profit apex.

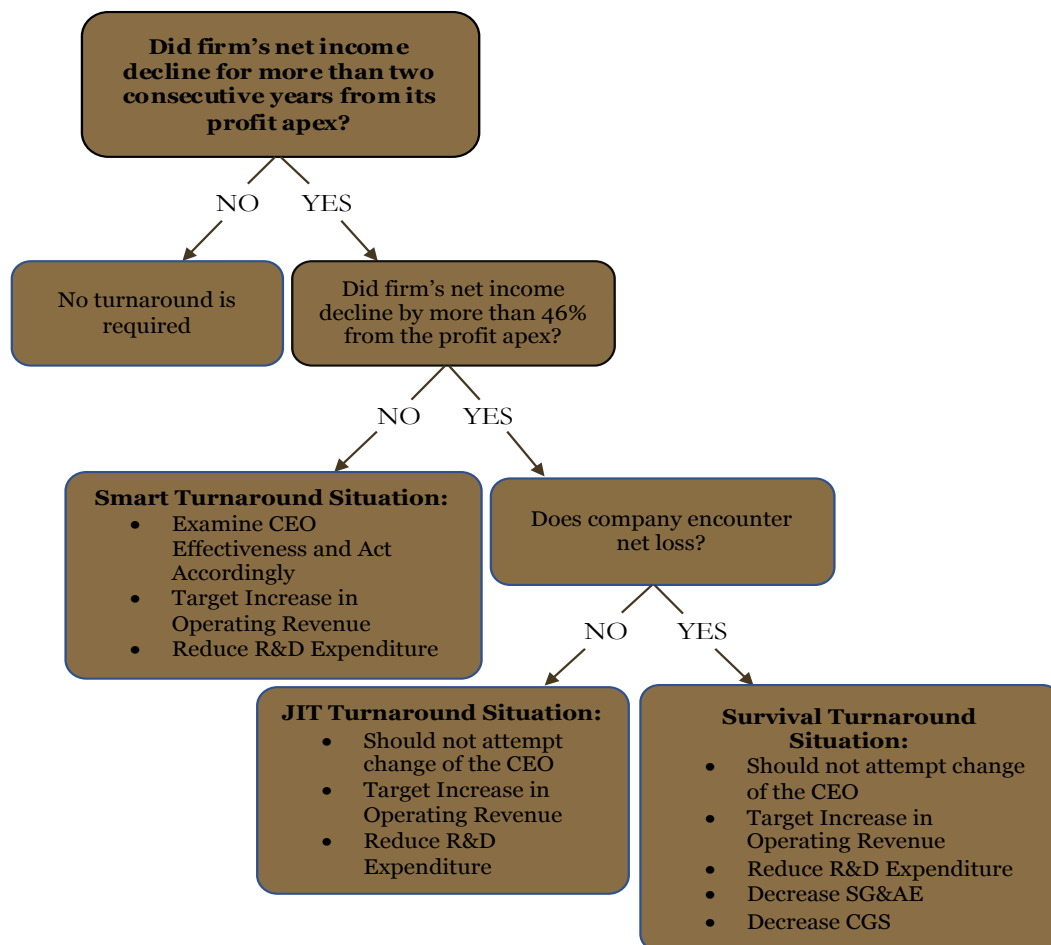


Figure 16. optimal framework of turnaround strategies at the discovered 64% decline from the profit apex

As the optimal framework of turnaround strategies at the discovered 64% decline from the profit apex, results suggest that, in order to accomplish successful Smart and JIT turnarounds during a short period, declined listed SMEs should reduce their costs through decreasing their R&D expenditure at the same time as they increase their OR. Moreover, the findings also reveal that while firms attempting JIT turnaround should not change the CEO during a turnaround situation, for companies attempting Smart turnarounds additional years of experience of the CEOs in the same firms do not contribute to the successful turnaround of declined listed SMEs. Furthermore, improving the shareholder concentration ratio, as well as more years of operation (increased age) of the firm significantly increase the likelihood of success in Smart turnarounds. However, JIT turnaround firms do not seem to enjoy any advantage in terms of age of the firms as well as their shareholder concentration ratio.

Consequently, the research contributed to theory by investigating the effectiveness of turnaround strategies pertaining to different extents of performance declines in listed SMEs. The findings from the analysis of data determined that among all types of turnaround, R&D decrease is most effective for a Smart turnaround. It is however the OR increase that affects JIT turnarounds the most. Furthermore, decrease in the CGS and SG&AE demonstrate the greatest impact on the success of Survival turnaround attempts.

6.1.3. Contribution to Methodology

Utilizing panel data for 15 years (2000-2014) and through the use of large sample study, relative to the nature of the dependent variables, this research employed logistic regression method to estimate the results. Relative to the firms that encountered net loss (Survival turnaround), the dependent variable is a binary variable. Therefore, the regression results were estimated using a panel random effects robust logistic regression method. On the other hand, relative to declined listed SMEs that attempted a turnaround prior to the point they face net loss, the dependent variable is a multinomial variable, categorizing different types of turnaround (Smart and JIT) pertaining to different extents of decline from the profit apex. Thus, the results were

incorporated through a grid-search process along with multinomial panel random effects robust logistic regression technique. Within the existing corporate turnaround management literature, utilizing the grid-search procedure along with multinomial panel logistic model has never been employed to study turnarounds.

6.2. Implications

The findings from this research has the potential to provide insight for the managers of SMEs about appropriate turnaround strategies relative to different extents of decline in performance and add to the understanding of how SMEs may address a performance decline. The determined optimal framework of turnaround strategies in this research provides managers with specific managerial actions that need to be implemented relative to different extents of decline in performance in SMEs (as illustrated in figure 17).

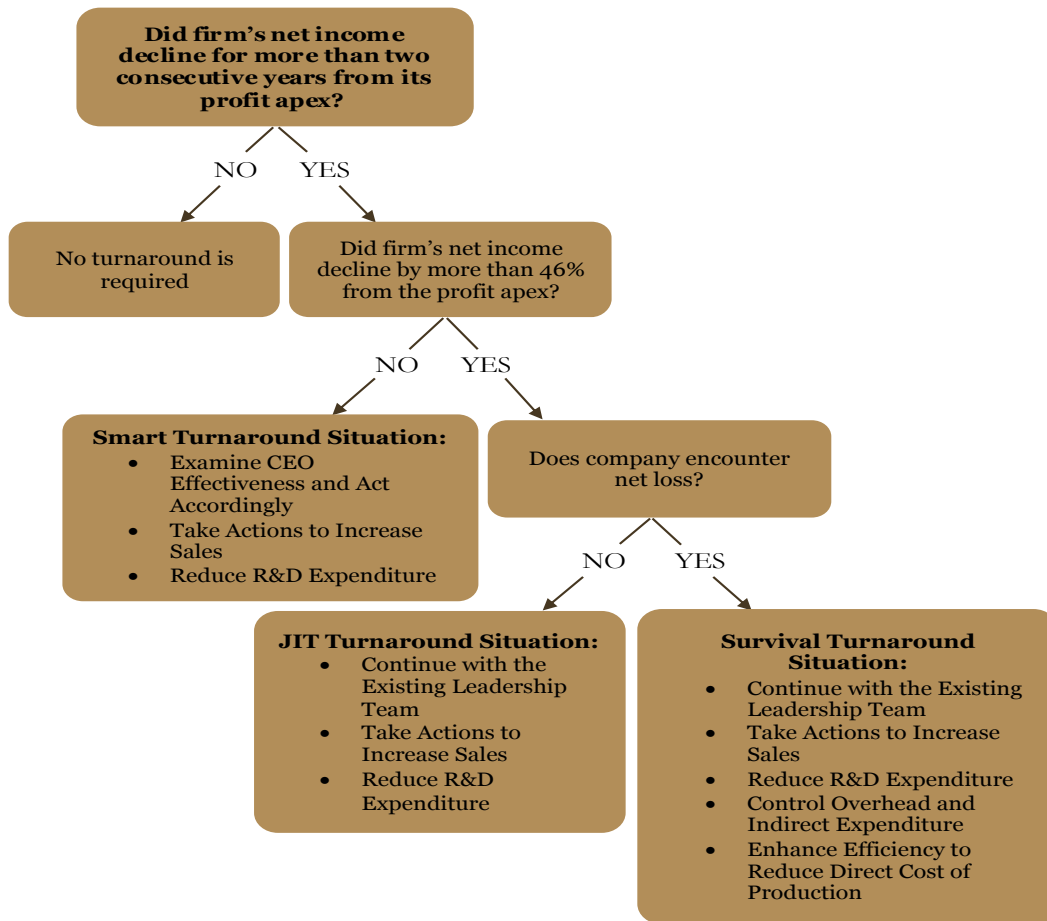


Figure 17. Implications for managers with respect to the Optimal Turnaround Strategies Framework

6.3. Limitations

This Study has four main limitations. First, it investigates only publicly listed SMEs defined in this study as firms with fewer than 300 employees and annual operating revenue less than 15 million US\$. As there are other ways of defining SMEs, the definition employed in this study limits the number of SMEs that are considered in the sample. The second limitation is that the study only takes the sample of SMEs from the North America. Therefore, the proposed research only represents the publicly listed SMEs within the North America region. The remainder of the world has significant number of listed SMEs that were not examined by this research. As different regions have different economic contexts, the success of turnaround strategies could differ in different economies, and to that extent the findings of this study may not be applicable

to SMEs in other regions of the world. As the third limitation, due to data availability constraints, financial restructuring variables have not been incorporated into the regression models in this research. As the fourth limitation, while the inclusion of CEO experience has provided useful insight on the choice of turnaround strategies, future inclusion of financial restructuring variables in the model specification will allow the discussion/conclusions on strategic changes that firms require to undertake, to be placed more closely to the framework/context of a managerial perspective.

6.4. Future Research

This dissertation contributed theoretically, as well as from practical standpoint, to investigate the short-term application of turnaround strategies pertaining to different extents of performance decline in listed SMEs. However, as a potential for future research, the long-term application of turnaround strategies remains unaddressed as the research focused on short-term turnaround strategies. With respect to the discovered 63% to 65% optimal cutoff threshold of decline in this dissertation, it will be worthwhile to examine how the long-term strategies would differ. Furthermore, among the examined turnaround strategies applicable to listed SMEs, it is also worth further investigation to determine those strategies that contribute to faster emergence from the decline state in listed SMEs pertaining to different extents of decline from the profit apex. Additionally, due to data availability limitations, while revenue-generating strategies are not explicitly studied in this research, as a future research opportunity, it is worthwhile to investigate the application of different revenue-increasing strategies in listed SMEs during a performance decline state. However, similar findings would be expected in terms of the positive effect of revenue-generating strategies on publicly listed SME's performance improvement during a turnaround situation if data was available.

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